



SEQUENCE LISTING

<110> Weltzin, Richard A.
Monath, Thomas P.

<120> Vaccinia Virus Strains

<130> 06132/091001

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<141> 2004-04-16

<150> 10/445,671

<151> 2003-05-27

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<151> 2001-04-23

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<170> FastSEQ for Windows Version 4.0

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<211> 202118

<212> DNA

<213> vaccinia virus

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<221> misc feature

<222> 202067, 202075, 202104, 202105, 202106, 202107, 202108, 202109,
202110, 202111

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 <213> vaccinia virus

<220>
 <221> CDS
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Glu Glu Asn Lys His His Met Gly Ile Asp Val Ile Ile Lys Val Thr
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aag caa gac caa aca ccg acc aat gat aag att tgc caa tcc gta acg 144
Lys Gln Asp Gln Thr Pro Thr Asn Asp Lys Ile Cys Gln Ser Val Thr
35 40 45

gaa att aca gag tcc gag tca gat cca gat ccc gag gtg gaa tca gaa 192
Glu Ile Thr Glu Ser Glu Ser Asp Pro Asp Pro Glu Val Glu Ser Glu
50 55 60

gat gat tcc aca tca gtc gag gat gta gat cct cct acc act tat tac 240
Asp Asp Ser Thr Ser Val Glu Asp Val Asp Pro Pro Thr Thr Tyr Tyr
65 70 75 80

tcc atc atc ggt gga ggt ctg aga atg aac ttt gga ttc acc aaa tgt 288
Ser Ile Ile Gly Gly Gly Leu Arg Met Asn Phe Gly Phe Thr Lys Cys
85 90 95

cct cag att aaa tcc atc tca gaa tcc gct gat gga aac aca gtg aat 336
Pro Gln Ile Lys Ser Ile Ser Glu Ser Ala Asp Gly Asn Thr Val Asn
100 105 110

gct aga ttg tcc agc gtg tcc cca gga caa ggt aag gac tct ccc gcg 384
Ala Arg Leu Ser Ser Val Ser Pro Gly Gln Gly Lys Asp Ser Pro Ala
115 120 125

atc act cat gaa gaa gct ctt gct atg atc aaa gac tgt gag gtg tct 432
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130 135 140

atc gac atc aga tgt agc gaa gaa gag aaa gac agc gac atc aag acc 480

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Asp	Ile	Ile	Gly	Ser	Thr	Ile	Val	Asp	Thr	Lys	Cys	Val	Lys	Asn	Leu	
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gtc																723
Val																

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 <212> PRT
 <213> vaccinia virus

<400> 4

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<220>
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 <212> PRT
 <213> vaccinia virus

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 100 105 110
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 Ala Leu
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 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(369)

<400> 7
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 Met Lys Ser Val Leu Tyr Ser Tyr Ile Leu Phe Leu Ser Cys Ile Ile
 1 5 10 15
 ata aac gga aga gat ata gca ccg cat gca cca tcc gat gga aag tgt 96
 Ile Asn Gly Arg Asp Ile Ala Pro His Ala Pro Ser Asp Gly Lys Cys
 20 25 30
 aaa gac aac gaa tac aaa cgc cat aat ttg tgt ccg gga aca tac gct 144
 Lys Asp Asn Glu Tyr Lys Arg His Asn Leu Cys Pro Gly Thr Tyr Ala
 35 40 45
 tcc aga tta tgc gat agc aag act aac aca caa tgt acg ccg tgt ggt 192
 Ser Arg Leu Cys Asp Ser Lys Thr Asn Thr Gln Cys Thr Pro Cys Gly
 50 55 60
 tcg ggt acc ttc aca tct cgc aat aat cat tta ccc gct tgt cta agt 240
 Ser Gly Thr Phe Thr Ser Arg Asn Asn His Leu Pro Ala Cys Leu Ser
 65 70 75 80
 tgt aac gga aga tgc gat cgt gta aca cta ctc aca ata gaa tct gtg 288

Cys	Asn	Gly	Arg	Cys	Asp	Arg	Val	Thr	Leu	Leu	Thr	Ile	Glu	Ser	Val	
				85					90					95		
aat	gct	ctc	ccg	gat	att	att	gtc	ttc	tca	aag	gat	cat	ccg	gat	gca	336
Asn	Ala	Leu	Pro	Asp	Ile	Ile	Val	Phe	Ser	Lys	Asp	His	Pro	Asp	Ala	
			100					105					110			
agg	cat	gtg	ttt	ccc	aaa	caa	aat	gtg	gaa	tag						369
Arg	His	Val	Phe	Pro	Lys	Gln	Asn	Val	Glu	*						
		115					120									

<210> 8
 <211> 122
 <212> PRT
 <213> vaccinia virus

Met	Lys	Ser	Val	Leu	Tyr	Ser	Tyr	Ile	Leu	Phe	Leu	Ser	Cys	Ile	Ile	
1				5					10					15		
Ile	Asn	Gly	Arg	Asp	Ile	Ala	Pro	His	Ala	Pro	Ser	Asp	Gly	Lys	Cys	
			20					25					30			
Lys	Asp	Asn	Glu	Tyr	Lys	Arg	His	Asn	Leu	Cys	Pro	Gly	Thr	Tyr	Ala	
		35				40						45				
Ser	Arg	Leu	Cys	Asp	Ser	Lys	Thr	Asn	Thr	Gln	Cys	Thr	Pro	Cys	Gly	
	50					55				60						
Ser	Gly	Thr	Phe	Thr	Ser	Arg	Asn	Asn	His	Leu	Pro	Ala	Cys	Leu	Ser	
65					70				75					80		
Cys	Asn	Gly	Arg	Cys	Asp	Arg	Val	Thr	Leu	Leu	Thr	Ile	Glu	Ser	Val	
			85						90					95		
Asn	Ala	Leu	Pro	Asp	Ile	Ile	Val	Phe	Ser	Lys	Asp	His	Pro	Asp	Ala	
			100					105					110			
Arg	His	Val	Phe	Pro	Lys	Gln	Asn	Val	Glu							
		115					120									

<210> 9
 <211> 336
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(336)

atg	ttg	cct	cat	aca	tcg	gat	acg	aca	tca	acc	ttc	cga	cta	aag	acg	48
Met	Leu	Pro	His	Thr	Ser	Asp	Thr	Thr	Ser	Thr	Phe	Arg	Leu	Lys	Thr	
1				5				10						15		
gta	ttc	gac	ttg	gtg	ttt	gaa	aac	aga	aac	atc	ata	tac	aag	gcg	gat	96
Val	Phe	Asp	Leu	Val	Phe	Glu	Asn	Arg	Asn	Ile	Ile	Tyr	Lys	Ala	Asp	
			20					25					30			
gtt	gtg	aat	gac	atc	atc	cac	cac	aga	ctg	aaa	gta	cct	atg	att	aaa	144
Val	Val	Asn	Asp	Ile	Ile	His	His	Arg	Leu	Lys	Val	Pro	Met	Ile	Lys	
		35					40					45				
tcg	ttg	ttc	tac	aag	atg	tca	gaa	ttc	tct	ccc	tac	gac	gat	tac	tac	192

Ser	Leu	Phe	Tyr	Lys	Met	Ser	Glu	Phe	Ser	Pro	Tyr	Asp	Asp	Tyr	Tyr		
50						55					60						
gta	aaa	aag	ata	cta	gcc	tac	tgc	cta	tta	agg	gac	gag	tca	ttc	gcg	240	
Val	Lys	Lys	Ile	Leu	Ala	Tyr	Cys	Leu	Leu	Arg	Asp	Glu	Ser	Phe	Ala		
65					70					75					80		
gaa	cta	cat	agt	aaa	ttc	tgt	tta	aac	gag	gac	tat	aaa	agt	gta	ttt	288	
Glu	Leu	His	Ser	Lys	Phe	Cys	Leu	Asn	Glu	Asp	Tyr	Lys	Ser	Val	Phe		
				85					90					95			
atg	aaa	aat	ata	tca	ttc	gat	aag	ata	gat	tcc	atc	atc	gtg	aca	taa	336	
Met	Lys	Asn	Ile	Ser	Phe	Asp	Lys	Ile	Asp	Ser	Ile	Ile	Val	Thr	*		
			100					105					110				

<210> 10
 <211> 111
 <212> PRT
 <213> vaccinia virus

Met	Leu	Pro	His	Thr	Ser	Asp	Thr	Thr	Ser	Thr	Phe	Arg	Leu	Lys	Thr		
1				5					10					15			
Val	Phe	Asp	Leu	Val	Phe	Glu	Asn	Arg	Asn	Ile	Ile	Tyr	Lys	Ala	Asp		
			20					25					30				
Val	Val	Asn	Asp	Ile	Ile	His	His	Arg	Leu	Lys	Val	Pro	Met	Ile	Lys		
		35				40						45					
Ser	Leu	Phe	Tyr	Lys	Met	Ser	Glu	Phe	Ser	Pro	Tyr	Asp	Asp	Tyr	Tyr		
50					55						60						
Val	Lys	Lys	Ile	Leu	Ala	Tyr	Cys	Leu	Leu	Arg	Asp	Glu	Ser	Phe	Ala		
65					70					75					80		
Glu	Leu	His	Ser	Lys	Phe	Cys	Leu	Asn	Glu	Asp	Tyr	Lys	Ser	Val	Phe		
			85					90						95			
Met	Lys	Asn	Ile	Ser	Phe	Asp	Lys	Ile	Asp	Ser	Ile	Ile	Val	Thr			
			100					105					110				

<210> 11
 <211> 387
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(387)

atg	gag	caa	aca	tta	acg	ccg	tta	cac	act	tac	ctt	caa	cag	tat	acc	48	
Met	Glu	Gln	Thr	Leu	Thr	Pro	Leu	His	Thr	Tyr	Leu	Gln	Gln	Tyr	Thr		
1				5					10					15			
aaa	cat	agt	cct	cgt	gtg	gtg	tat	gct	ctt	tta	tct	cga	gga	tac	gta	96	
Lys	His	Ser	Pro	Arg	Val	Val	Tyr	Ala	Leu	Leu	Ser	Arg	Gly	Tyr	Val		
			20					25					30				
ata	atc	ttg	att	gta	cac	cca	tca	tgg	aac	gat	tgt	gca	aca	ggg	cat	144	
Ile	Ile	Leu	Ile	Val	His	Pro	Ser	Trp	Asn	Asp	Cys	Ala	Thr	Gly	His		

35	40	45	
att ctc ata atg tta ctc aat tgg cac gaa caa aag gaa gaa gga caa			192
Ile Leu Ile Met Leu Leu Asn Trp His Glu Gln Lys Glu Glu Gly Gln			
50	55	60	
cat cta ctt tat cta ttc ata aaa cat aat caa gga tac act ctc aat			240
His Leu Leu Tyr Leu Phe Ile Lys His Asn Gln Gly Tyr Thr Leu Asn			
65	70	75	80
ata cta cgg tat cta cta gat agg ttc gac att cag aaa gac gaa tat			288
Ile Leu Arg Tyr Leu Leu Asp Arg Phe Asp Ile Gln Lys Asp Glu Tyr			
85	90	95	
tat aat acc gcc ttt caa aat tgt aac aac aat gtt gcc tca tac atc			336
Tyr Asn Thr Ala Phe Gln Asn Cys Asn Asn Asn Val Ala Ser Tyr Ile			
100	105	110	
gga tac gac atc aac ctt ccg act aaa gac ggt att cga ctt ggt gtt			384
Gly Tyr Asp Ile Asn Leu Pro Thr Lys Asp Gly Ile Arg Leu Gly Val			
115	120	125	
tga			387
*			

<210> 12
 <211> 128
 <212> PRT
 <213> vaccinia virus

<400> 12
 Met Glu Gln Thr Leu Thr Pro Leu His Thr Tyr Leu Gln Gln Tyr Thr
 1 5 10 15
 Lys His Ser Pro Arg Val Val Tyr Ala Leu Leu Ser Arg Gly Tyr Val
 20 25 30
 Ile Ile Leu Ile Val His Pro Ser Trp Asn Asp Cys Ala Thr Gly His
 35 40 45
 Ile Leu Ile Met Leu Leu Asn Trp His Glu Gln Lys Glu Glu Gly Gln
 50 55 60
 His Leu Leu Tyr Leu Phe Ile Lys His Asn Gln Gly Tyr Thr Leu Asn
 65 70 75 80
 Ile Leu Arg Tyr Leu Leu Asp Arg Phe Asp Ile Gln Lys Asp Glu Tyr
 85 90 95
 Tyr Asn Thr Ala Phe Gln Asn Cys Asn Asn Asn Val Ala Ser Tyr Ile
 100 105 110
 Gly Tyr Asp Ile Asn Leu Pro Thr Lys Asp Gly Ile Arg Leu Gly Val
 115 120 125

<210> 13
 <211> 411
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(411)

<400> 13
atg tct cgc ata aac att act aaa aaa ata tat tgt tcg gtt ttc ttt 48
Met Ser Arg Ile Asn Ile Thr Lys Lys Ile Tyr Cys Ser Val Phe Phe
1 5 10 15

cac atc ttt aat tat gaa aaa gta aat cat tat gag atg gac gag att 96
His Ile Phe Asn Tyr Glu Lys Val Asn His Tyr Glu Met Asp Glu Ile
20 25 30

gta cgc atc gtt cgc gac agt atg tgg tac ata cct aac gta ttt atg 144
Val Arg Ile Val Arg Asp Ser Met Trp Tyr Ile Pro Asn Val Phe Met
35 40 45

gac gac ggt aag aat gaa ggt cac gtt tct gtc aac aat gtt tgt cat 192
Asp Asp Gly Lys Asn Glu Gly His Val Ser Val Asn Asn Val Cys His
50 55 60

atg tat ttt acg ttc ttt gat gtg gat aca tcg tct cat ctg ttt aag 240
Met Tyr Phe Thr Phe Phe Asp Val Asp Thr Ser Ser His Leu Phe Lys
65 70 75 80

cta gtt att aaa cac tgc gat ctg aat aaa cga ggt aac tct cca tta 288
Leu Val Ile Lys His Cys Asp Leu Asn Lys Arg Gly Asn Ser Pro Leu
85 90 95

cat tgc tat acg atg aat aca cga ttt aat cca tct gta tta aag ata 336
His Cys Tyr Thr Met Asn Thr Arg Phe Asn Pro Ser Val Leu Lys Ile
100 105 110

ttg tta cac cac ggc atg cgt aac ttt gat agc aag gat gac cac tat 384
Leu Leu His His Gly Met Arg Asn Phe Asp Ser Lys Asp Asp His Tyr
115 120 125

caa tcg ata aca aga tct ttg ata tac 411
Gln Ser Ile Thr Arg Ser Leu Ile Tyr
130 135

<210> 14
<211> 137
<212> PRT
<213> vaccinia virus

<400> 14
Met Ser Arg Ile Asn Ile Thr Lys Lys Ile Tyr Cys Ser Val Phe Phe
1 5 10 15
His Ile Phe Asn Tyr Glu Lys Val Asn His Tyr Glu Met Asp Glu Ile
20 25 30
Val Arg Ile Val Arg Asp Ser Met Trp Tyr Ile Pro Asn Val Phe Met
35 40 45
Asp Asp Gly Lys Asn Glu Gly His Val Ser Val Asn Asn Val Cys His
50 55 60
Met Tyr Phe Thr Phe Phe Asp Val Asp Thr Ser Ser His Leu Phe Lys
65 70 75 80
Leu Val Ile Lys His Cys Asp Leu Asn Lys Arg Gly Asn Ser Pro Leu
85 90 95
His Cys Tyr Thr Met Asn Thr Arg Phe Asn Pro Ser Val Leu Lys Ile
100 105 110
Leu Leu His His Gly Met Arg Asn Phe Asp Ser Lys Asp Asp His Tyr

115
 Gln Ser Ile Thr Arg Ser Leu Ile Tyr
 130 135

125

<210> 15
 <211> 594
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(594)

<400> 15
 atg tac ggt ctg ata tta tcg aga ttt aat aat tgc ggg tat cac tgt 48
 Met Tyr Gly Leu Ile Leu Ser Arg Phe Asn Asn Cys Gly Tyr His Cys
 1 5 10 15
 tat gaa acc ata cta ata gat gta ttt gat ata cta agc aag tac atg 96
 Tyr Glu Thr Ile Leu Ile Asp Val Phe Asp Ile Leu Ser Lys Tyr Met
 20 25 30
 gat aat ata gat atg atc gat aat gag aat aaa act cta cta tat tac 144
 Asp Asn Ile Asp Met Ile Asp Asn Glu Asn Lys Thr Leu Leu Tyr Tyr
 35 40 45
 gcg gtc gat gtc aat aat ata caa ttt gca aag cgg tta ttg gaa tat 192
 Ala Val Asp Val Asn Asn Ile Gln Phe Ala Lys Arg Leu Leu Glu Tyr
 50 55 60
 gga gcg agt gtt aca aca tca cgc tcg ata atc aat acg gcc atc cag 240
 Gly Ala Ser Val Thr Thr Ser Arg Ser Ile Ile Asn Thr Ala Ile Gln
 65 70 75 80
 aaa agt agt tac aga aga gaa aac aaa acg aag cta gtt gat tta tta 288
 Lys Ser Ser Tyr Arg Arg Glu Asn Lys Thr Lys Leu Val Asp Leu Leu
 85 90 95
 ctt agc tac cat ccc act cta gag act atg att gac gca ttt aat aga 336
 Leu Ser Tyr His Pro Thr Leu Glu Thr Met Ile Asp Ala Phe Asn Arg
 100 105 110
 gat ata cgc tat cta tat cct gaa cca tta ttc gcc tgt atc aga tac 384
 Asp Ile Arg Tyr Leu Tyr Pro Glu Pro Leu Phe Ala Cys Ile Arg Tyr
 115 120 125
 gcc tta atc ata gat gat gat ttt cct tct aaa gta aag tat gat atc 432
 Ala Leu Ile Ile Asp Asp Asp Phe Pro Ser Lys Val Lys Tyr Asp Ile
 130 135 140
 gcc ggt cgt cat aag gaa cta aag cgc tat aga gta gac att aat aga 480
 Ala Gly Arg His Lys Glu Leu Lys Arg Tyr Arg Val Asp Ile Asn Arg
 145 150 155 160
 atg aag aat gcc tac ata tca ggc gtc tcc atg ttt gat ata tta ttt 528
 Met Lys Asn Ala Tyr Ile Ser Gly Val Ser Met Phe Asp Ile Leu Phe
 165 170 175

aaa cga agc aaa cgc cac aga ttg aga tac gca aag aat ccg aca tca 576
 Lys Arg Ser Lys Arg His Arg Leu Arg Tyr Ala Lys Asn Pro Thr Ser
 180 185 190

aat ggt aca aaa aag aac 594
 Asn Gly Thr Lys Lys Asn
 195

<210> 16
 <211> 198
 <212> PRT
 <213> vaccinia virus

<400> 16
 Met Tyr Gly Leu Ile Leu Ser Arg Phe Asn Asn Cys Gly Tyr His Cys
 1 5 10 15
 Tyr Glu Thr Ile Leu Ile Asp Val Phe Asp Ile Leu Ser Lys Tyr Met
 20 25 30
 Asp Asn Ile Asp Met Ile Asp Asn Glu Asn Lys Thr Leu Leu Tyr Tyr
 35 40 45
 Ala Val Asp Val Asn Asn Ile Gln Phe Ala Lys Arg Leu Leu Glu Tyr
 50 55 60
 Gly Ala Ser Val Thr Thr Ser Arg Ser Ile Ile Asn Thr Ala Ile Gln
 65 70 75 80
 Lys Ser Ser Tyr Arg Arg Glu Asn Lys Thr Lys Leu Val Asp Leu Leu
 85 90 95
 Leu Ser Tyr His Pro Thr Leu Glu Thr Met Ile Asp Ala Phe Asn Arg
 100 105 110
 Asp Ile Arg Tyr Leu Tyr Pro Glu Pro Leu Phe Ala Cys Ile Arg Tyr
 115 120 125
 Ala Leu Ile Ile Asp Asp Asp Phe Pro Ser Lys Val Lys Tyr Asp Ile
 130 135 140
 Ala Gly Arg His Lys Glu Leu Lys Arg Tyr Arg Val Asp Ile Asn Arg
 145 150 155 160
 Met Lys Asn Ala Tyr Ile Ser Gly Val Ser Met Phe Asp Ile Leu Phe
 165 170 175
 Lys Arg Ser Lys Arg His Arg Leu Arg Tyr Ala Lys Asn Pro Thr Ser
 180 185 190
 Asn Gly Thr Lys Lys Asn
 195

<210> 17
 <211> 1146
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1146)

<400> 17
 atg att gcc ttc atc att ttt cgt gaa ata gga ata att agc acc aga 48
 Met Ile Ala Phe Ile Ile Phe Arg Glu Ile Gly Ile Ile Ser Thr Arg
 1 5 10 15
 ata gct atg gat tgc aca tgt att cta tgt cgt cta ctg gat gaa gat 96
 Ile Ala Met Asp Cys Thr Cys Ile Leu Cys Arg Leu Leu Asp Glu Asp

20										25					30					
gtg	acg	tac	aaa	aaa	ata	aaa	cta	gaa	att	gaa	acg	tgt	cac	aac	tta	144				
Val	Thr	Tyr	Lys	Lys	Ile	Lys	Leu	Glu	Ile	Glu	Thr	Cys	His	Asn	Leu					
35			40					45												
tca	aaa	cat	ata	gat	aga	cga	gga	aac	aat	gcg	cta	cat	tgt	tac	gtc	192				
Ser	Lys	His	Ile	Asp	Arg	Arg	Gly	Asn	Asn	Ala	Leu	His	Cys	Tyr	Val					
50		55					60													
ttc	aat	aaa	tgc	gat	aca	gac	att	aag	att	gtt	cga	ctg	tta	ctc	tct	240				
Phe	Asn	Lys	Cys	Asp	Thr	Asp	Ile	Lys	Ile	Val	Arg	Leu	Leu	Leu	Ser					
65		70					75			80										
cgc	gga	gtc	gag	aga	ctt	tgt	aga	aac	aac	gaa	gga	tta	act	ccg	cta	288				
Arg	Gly	Val	Glu	Arg	Leu	Cys	Arg	Asn	Asn	Glu	Gly	Leu	Thr	Pro	Leu					
85				90					95											
gga	gta	tac	agt	aag	cat	aga	tac	gtc	aaa	tct	caa	att	gtg	cat	cta	336				
Gly	Val	Tyr	Ser	Lys	His	Arg	Tyr	Val	Lys	Ser	Gln	Ile	Val	His	Leu					
100			105					110												
ctg	ata	tcc	agc	tat	tcg	aat	tcc	tct	aac	gaa	ctc	aag	tcg	aat	ata	384				
Leu	Ile	Ser	Ser	Tyr	Ser	Asn	Ser	Ser	Asn	Glu	Leu	Lys	Ser	Asn	Ile					
115		120					125													
aat	gat	ttc	gat	ctg	tat	tcg	gat	aat	atc	gac	tta	cgt	ctg	cta	aaa	432				
Asn	Asp	Phe	Asp	Leu	Tyr	Ser	Asp	Asn	Ile	Asp	Leu	Arg	Leu	Leu	Lys					
130		135					140													
tac	cta	att	gtg	gat	aaa	cgg	ata	cgt	ccg	tcc	aag	aat	acg	aat	tat	480				
Tyr	Leu	Ile	Val	Asp	Lys	Arg	Ile	Arg	Pro	Ser	Lys	Asn	Thr	Asn	Tyr					
145		150					155			160										
gca	atc	aat	ggt	ctc	gga	ttg	gtg	gat	ata	tac	gta	acg	acg	cct	aat	528				
Ala	Ile	Asn	Gly	Leu	Gly	Leu	Val	Asp	Ile	Tyr	Val	Thr	Thr	Pro	Asn					
165				170					175											
ccg	aga	cca	gaa	gta	ttg	cta	tgg	ctt	ctt	aaa	tca	gaa	tgt	tac	agc	576				
Pro	Arg	Pro	Glu	Val	Leu	Leu	Trp	Leu	Leu	Lys	Ser	Glu	Cys	Tyr	Ser					
180			185					190												
acc	ggt	tac	gta	ttt	cgt	acc	tgt	atg	tac	aac	agt	gat	atg	tgt	aag	624				
Thr	Gly	Tyr	Val	Phe	Arg	Thr	Cys	Met	Tyr	Asn	Ser	Asp	Met	Cys	Lys					
195		200					205													
aac	tct	ctt	cat	tac	tat	ata	tcg	tct	cat	aga	gaa	tct	caa	tct	cta	672				
Asn	Ser	Leu	His	Tyr	Tyr	Ile	Ser	Ser	His	Arg	Glu	Ser	Gln	Ser	Leu					
210		215					220													
tcc	aag	gat	gta	att	aaa	tgt	ttg	atc	aat	aac	aat	gtt	tcc	atc	cat	720				
Ser	Lys	Asp	Val	Ile	Lys	Cys	Leu	Ile	Asn	Asn	Asn	Val	Ser	Ile	His					
225		230					235			240										
ggc	aga	gac	gaa	gga	gga	tct	tta	ccc	atc	caa	tac	tac	tgg	tct	ttc	768				
Gly	Arg	Asp	Glu	Gly	Gly	Ser	Leu	Pro	Ile	Gln	Tyr	Tyr	Trp	Ser	Phe					
245				250					255											
tca	acc	ata	gat	ata	gag	att	gtt	aaa	tta	tta	tta	ata	aag	gat	gtg	816				

Ser	Thr	Ile	Asp	Ile	Glu	Ile	Val	Lys	Leu	Leu	Leu	Ile	Lys	Asp	Val		
			260					265					270				
gac	acg	tgt	aga	gta	tac	gac	gtc	agc	cct	ata	tta	gag	gcg	tat	tat	864	
Asp	Thr	Cys	Arg	Val	Tyr	Asp	Val	Ser	Pro	Ile	Leu	Glu	Ala	Tyr	Tyr		
		275					280					285					
cta	aac	aag	cga	ttt	aga	gta	acc	cca	tat	aat	gta	gac	atg	gaa	atc	912	
Leu	Asn	Lys	Arg	Phe	Arg	Val	Thr	Pro	Tyr	Asn	Val	Asp	Met	Glu	Ile		
		290				295					300						
ggt	aat	ctt	ctt	att	gag	aga	cgt	cat	act	ctt	gtc	gac	gta	atg	cgt	960	
Val	Asn	Leu	Leu	Ile	Glu	Arg	Arg	His	Thr	Leu	Val	Asp	Val	Met	Arg		
305					310					315					320		
agt	att	act	tcg	tac	gat	tcc	aga	gaa	tat	aac	cac	tac	atc	atc	gat	1008	
Ser	Ile	Thr	Ser	Tyr	Asp	Ser	Arg	Glu	Tyr	Asn	His	Tyr	Ile	Ile	Asp		
				325					330					335			
aac	att	cta	aag	aga	ttt	aga	caa	cag	gat	gaa	tcc	atc	gta	caa	gcc	1056	
Asn	Ile	Leu	Lys	Arg	Phe	Arg	Gln	Gln	Asp	Glu	Ser	Ile	Val	Gln	Ala		
			340					345					350				
atg	ttg	ata	aac	tac	tta	cat	tac	ggc	gat	atg	gtc	gtt	cga	tgc	atg	1104	
Met	Leu	Ile	Asn	Tyr	Leu	His	Tyr	Gly	Asp	Met	Val	Val	Arg	Cys	Met		
		355					360					365					
tta	gat	aac	gga	caa	caa	cta	tcc	tct	gca	cga	cta	ctt	tgt			1146	
Leu	Asp	Asn	Gly	Gln	Gln	Leu	Ser	Ser	Ala	Arg	Leu	Leu	Cys				
		370				375					380						

<210> 18
 <211> 382
 <212> PRT
 <213> vaccinia virus

<400> 18

Met	Ile	Ala	Phe	Ile	Ile	Phe	Arg	Glu	Ile	Gly	Ile	Ile	Ser	Thr	Arg		
1				5					10					15			
Ile	Ala	Met	Asp	Cys	Thr	Cys	Ile	Leu	Cys	Arg	Leu	Leu	Asp	Glu	Asp		
			20					25					30				
Val	Thr	Tyr	Lys	Lys	Ile	Lys	Leu	Glu	Ile	Glu	Thr	Cys	His	Asn	Leu		
		35					40					45					
Ser	Lys	His	Ile	Asp	Arg	Arg	Gly	Asn	Asn	Ala	Leu	His	Cys	Tyr	Val		
	50					55				60							
Phe	Asn	Lys	Cys	Asp	Thr	Asp	Ile	Lys	Ile	Val	Arg	Leu	Leu	Leu	Ser		
65				70						75					80		
Arg	Gly	Val	Glu	Arg	Leu	Cys	Arg	Asn	Asn	Glu	Gly	Leu	Thr	Pro	Leu		
			85					90					95				
Gly	Val	Tyr	Ser	Lys	His	Arg	Tyr	Val	Lys	Ser	Gln	Ile	Val	His	Leu		
		100						105					110				
Leu	Ile	Ser	Ser	Tyr	Ser	Asn	Ser	Ser	Asn	Glu	Leu	Lys	Ser	Asn	Ile		
		115					120					125					
Asn	Asp	Phe	Asp	Leu	Tyr	Ser	Asp	Asn	Ile	Asp	Leu	Arg	Leu	Leu	Lys		
	130					135					140						
Tyr	Leu	Ile	Val	Asp	Lys	Arg	Ile	Arg	Pro	Ser	Lys	Asn	Thr	Asn	Tyr		
145					150					155					160		

Ala	Ile	Asn	Gly	Leu	Gly	Leu	Val	Asp	Ile	Tyr	Val	Thr	Thr	Pro	Asn	
				165					170					175		
Pro	Arg	Pro	Glu	Val	Leu	Leu	Trp	Leu	Leu	Lys	Ser	Glu	Cys	Tyr	Ser	
			180					185					190			
Thr	Gly	Tyr	Val	Phe	Arg	Thr	Cys	Met	Tyr	Asn	Ser	Asp	Met	Cys	Lys	
		195					200					205				
Asn	Ser	Leu	His	Tyr	Tyr	Ile	Ser	Ser	His	Arg	Glu	Ser	Gln	Ser	Leu	
		210				215					220					
Ser	Lys	Asp	Val	Ile	Lys	Cys	Leu	Ile	Asn	Asn	Asn	Val	Ser	Ile	His	
225				230					235					240		
Gly	Arg	Asp	Glu	Gly	Gly	Ser	Leu	Pro	Ile	Gln	Tyr	Tyr	Trp	Ser	Phe	
			245					250						255		
Ser	Thr	Ile	Asp	Ile	Glu	Ile	Val	Lys	Leu	Leu	Leu	Ile	Lys	Asp	Val	
			260					265					270			
Asp	Thr	Cys	Arg	Val	Tyr	Asp	Val	Ser	Pro	Ile	Leu	Glu	Ala	Tyr	Tyr	
		275				280						285				
Leu	Asn	Lys	Arg	Phe	Arg	Val	Thr	Pro	Tyr	Asn	Val	Asp	Met	Glu	Ile	
		290				295					300					
Val	Asn	Leu	Leu	Ile	Glu	Arg	Arg	His	Thr	Leu	Val	Asp	Val	Met	Arg	
305				310					315					320		
Ser	Ile	Thr	Ser	Tyr	Asp	Ser	Arg	Glu	Tyr	Asn	His	Tyr	Ile	Ile	Asp	
			325					330						335		
Asn	Ile	Leu	Lys	Arg	Phe	Arg	Gln	Gln	Asp	Glu	Ser	Ile	Val	Gln	Ala	
		340					345						350			
Met	Leu	Ile	Asn	Tyr	Leu	His	Tyr	Gly	Asp	Met	Val	Val	Arg	Cys	Met	
		355				360					365					
Leu	Asp	Asn	Gly	Gln	Gln	Leu	Ser	Ser	Ala	Arg	Leu	Leu	Cys			
	370					375					380					

<210> 19
 <211> 546
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(546)

<400> 19																
atg	ata	tca	ctc	tca	ttc	ctc	atc	cac	aac	cca	tta	aaa	aaa	tgg	aaa	48
Met	Ile	Ser	Leu	Ser	Phe	Leu	Ile	His	Asn	Pro	Leu	Lys	Lys	Trp	Lys	
1				5					10					15		
tta	aag	ccc	tct	att	agc	ata	aac	ggc	tac	agg	tct	acc	ttt	aca	atg	96
Leu	Lys	Pro	Ser	Ile	Ser	Ile	Asn	Gly	Tyr	Arg	Ser	Thr	Phe	Thr	Met	
			20					25					30			
gcc	ttt	cct	tgt	gcc	cag	ttc	aga	ccc	tgt	cat	tgc	cac	gct	act	aag	144
Ala	Phe	Pro	Cys	Ala	Gln	Phe	Arg	Pro	Cys	His	Cys	His	Ala	Thr	Lys	
		35				40						45				
gac	tcc	ctg	aat	acc	gtg	gcc	gac	gtc	aga	cat	tgt	ctg	act	gaa	tac	192
Asp	Ser	Leu	Asn	Thr	Val	Ala	Asp	Val	Arg	His	Cys	Leu	Thr	Glu	Tyr	
		50				55					60					
atc	ctg	tgg	gtt	tct	cat	aga	tgg	acc	cat	aga	gaa	act	gca	ggg	cct	240
Ile	Leu	Trp	Val	Ser	His	Arg	Trp	Thr	His	Arg	Glu	Thr	Ala	Gly	Pro	
	65				70					75					80	

ctc tac agg ctt ctc atc tct ttc aga act gat gca acg gag ctc ttt	288
Leu Tyr Arg Leu Leu Ile Ser Phe Arg Thr Asp Ala Thr Glu Leu Phe	
85 90 95	
ggt ggt gag ttg aag gat tca ctt ccg tgg gac aat atc gac aat tgc	336
Gly Gly Glu Leu Lys Asp Ser Leu Pro Trp Asp Asn Ile Asp Asn Cys	
100 105 110	
gtg gag atc att aaa tgt ttc atc aga aat gac tcc atg aaa acc gcc	384
Val Glu Ile Ile Lys Cys Phe Ile Arg Asn Asp Ser Met Lys Thr Ala	
115 120 125	
gaa gaa ctt cgt gca atc att gga ctt tgt act caa tca gct atc gtc	432
Glu Glu Leu Arg Ala Ile Ile Gly Leu Cys Thr Gln Ser Ala Ile Val	
130 135 140	
tct gga aga gtc ttc aac gat aag tat atc gac ata cta ctt atg ctg	480
Ser Gly Arg Val Phe Asn Asp Lys Tyr Ile Asp Ile Leu Leu Met Leu	
145 150 155 160	
cga aag att ctg aac gag aac gac tat ctc acc ctc ttg gat cat atc	528
Arg Lys Ile Leu Asn Glu Asn Asp Tyr Leu Thr Leu Leu Asp His Ile	
165 170 175	
cgc act gct aaa tac taa	546
Arg Thr Ala Lys Tyr *	
180	

<210> 20
 <211> 181
 <212> PRT
 <213> vaccinia virus

<400> 20

Met Ile Ser Leu Ser Phe Leu Ile His Asn Pro Leu Lys Lys Trp Lys	
1 5 10 15	
Leu Lys Pro Ser Ile Ser Ile Asn Gly Tyr Arg Ser Thr Phe Thr Met	
20 25 30	
Ala Phe Pro Cys Ala Gln Phe Arg Pro Cys His Cys His Ala Thr Lys	
35 40 45	
Asp Ser Leu Asn Thr Val Ala Asp Val Arg His Cys Leu Thr Glu Tyr	
50 55 60	
Ile Leu Trp Val Ser His Arg Trp Thr His Arg Glu Thr Ala Gly Pro	
65 70 75 80	
Leu Tyr Arg Leu Leu Ile Ser Phe Arg Thr Asp Ala Thr Glu Leu Phe	
85 90 95	
Gly Gly Glu Leu Lys Asp Ser Leu Pro Trp Asp Asn Ile Asp Asn Cys	
100 105 110	
Val Glu Ile Ile Lys Cys Phe Ile Arg Asn Asp Ser Met Lys Thr Ala	
115 120 125	
Glu Glu Leu Arg Ala Ile Ile Gly Leu Cys Thr Gln Ser Ala Ile Val	
130 135 140	
Ser Gly Arg Val Phe Asn Asp Lys Tyr Ile Asp Ile Leu Leu Met Leu	
145 150 155 160	
Arg Lys Ile Leu Asn Glu Asn Asp Tyr Leu Thr Leu Leu Asp His Ile	
165 170 175	
Arg Thr Ala Lys Tyr	

<210> 21
 <211> 270
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(270)

<400> 21
 atg tcg tta gaa tca ttt atc ata act acg ttt aat aat aat tca tca 48
 Met Ser Leu Glu Ser Phe Ile Ile Thr Thr Phe Asn Asn Asn Ser Ser
 1 5 10 15
 acg aat atc gat aac atg tgt cat tta tac gtt aaa gtc tgt ccg tct 96
 Thr Asn Ile Asp Asn Met Cys His Leu Tyr Val Lys Val Cys Pro Ser
 20 25 30
 tct cta ttg ttt aga ctg ttt gta gaa tgc tgt gat ata aac aaa cta 144
 Ser Leu Leu Phe Arg Leu Phe Val Glu Cys Cys Asp Ile Asn Lys Leu
 35 40 45
 gta gaa ggt acg act ccg tta cac tgt tat cta atg aat gaa gga ttt 192
 Val Glu Gly Thr Thr Pro Leu His Cys Tyr Leu Met Asn Glu Gly Phe
 50 55 60
 gaa tca tct gtt tta aaa aac cta tta aag gag tat gtc atg aca gtg 240
 Glu Ser Ser Val Leu Lys Asn Leu Leu Lys Glu Tyr Val Met Thr Val
 65 70 75 80
 atg gtc aca ttc cat tac aca aat att taa 270
 Met Val Thr Phe His Tyr Thr Asn Ile *
 85

<210> 22
 <211> 89
 <212> PRT
 <213> vaccinia virus

<400> 22
 Met Ser Leu Glu Ser Phe Ile Ile Thr Thr Phe Asn Asn Asn Ser Ser
 1 5 10 15
 Thr Asn Ile Asp Asn Met Cys His Leu Tyr Val Lys Val Cys Pro Ser
 20 25 30
 Ser Leu Leu Phe Arg Leu Phe Val Glu Cys Cys Asp Ile Asn Lys Leu
 35 40 45
 Val Glu Gly Thr Thr Pro Leu His Cys Tyr Leu Met Asn Glu Gly Phe
 50 55 60
 Glu Ser Ser Val Leu Lys Asn Leu Leu Lys Glu Tyr Val Met Thr Val
 65 70 75 80
 Met Val Thr Phe His Tyr Thr Asn Ile
 85

<210> 23

<211> 156
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(156)

<400> 23
 atg aat tta cag aaa tta tct ctg gct ata tat ctt act gcg aca tgt 48
 Met Asn Leu Gln Lys Leu Ser Leu Ala Ile Tyr Leu Thr Ala Thr Cys
 1 5 10 15
 tcg tgg tgt tat gaa aca tgc ata aga aaa act gcg ttg tat cat gac 96
 Ser Trp Cys Tyr Glu Thr Cys Ile Arg Lys Thr Ala Leu Tyr His Asp
 20 25 30
 att caa ttg gag cat gta gaa gac aat aaa gat agt gta gcg tcg cta 144
 Ile Gln Leu Glu His Val Glu Asp Asn Lys Asp Ser Val Ala Ser Leu
 35 40 45
 ccg tac aag tag 156
 Pro Tyr Lys *
 50

<210> 24
 <211> 51
 <212> PRT
 <213> vaccinia virus

<400> 24
 Met Asn Leu Gln Lys Leu Ser Leu Ala Ile Tyr Leu Thr Ala Thr Cys
 1 5 10 15
 Ser Trp Cys Tyr Glu Thr Cys Ile Arg Lys Thr Ala Leu Tyr His Asp
 20 25 30
 Ile Gln Leu Glu His Val Glu Asp Asn Lys Asp Ser Val Ala Ser Leu
 35 40 45
 Pro Tyr Lys
 50

<210> 25
 <211> 573
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(573)

<400> 25
 atg atg ata tac gga tta ata gcg tgt ctt ata ttc gtg act tca tcc 48
 Met Met Ile Tyr Gly Leu Ile Ala Cys Leu Ile Phe Val Thr Ser Ser
 1 5 10 15
 atc gct agt cca ctt tat att ccc gtt att cca ccc att acg gaa gat 96
 Ile Ala Ser Pro Leu Tyr Ile Pro Val Ile Pro Pro Ile Thr Glu Asp
 20 25 30

aaa tcg ttc aat agt gta gag gta tta gtt tcc ttg ttt aga gat gac	144
Lys Ser Phe Asn Ser Val Glu Val Leu Val Ser Leu Phe Arg Asp Asp	
35 40 45	
caa aaa gac tat acg gta act tct cag ttc aat aac tac act atc gat	192
Gln Lys Asp Tyr Thr Val Thr Ser Gln Phe Asn Asn Tyr Thr Ile Asp	
50 55 60	
acc aaa gac tgg act atc ggc gta cta tcc aca cct gat ggt ttg gat	240
Thr Lys Asp Trp Thr Ile Gly Val Leu Ser Thr Pro Asp Gly Leu Asp	
65 70 75 80	
ata cca ttg act aat ata act tat tgg tca cgg ttt act ata ggt cgt	288
Ile Pro Leu Thr Asn Ile Thr Tyr Trp Ser Arg Phe Thr Ile Gly Arg	
85 90 95	
gca ttg ttc aaa tca gag tct gag gat att ttc caa aag aaa atg agt	336
Ala Leu Phe Lys Ser Glu Ser Glu Asp Ile Phe Gln Lys Lys Met Ser	
100 105 110	
att cta ggt gtt tct ata gaa tgt aag aag tcg tcg aca tta ctt act	384
Ile Leu Gly Val Ser Ile Glu Cys Lys Lys Ser Ser Thr Leu Leu Thr	
115 120 125	
ttt ttg acc gtg cgt aaa atg act cga gta ttt aat aaa ttt cca gat	432
Phe Leu Thr Val Arg Lys Met Thr Arg Val Phe Asn Lys Phe Pro Asp	
130 135 140	
atg gct tat tat cga gga gac tgt tta aaa gcc gtt tat gta aca atg	480
Met Ala Tyr Tyr Arg Gly Asp Cys Leu Lys Ala Val Tyr Val Thr Met	
145 150 155 160	
act tat aaa aat act aaa act gga gag act gat tac acg tac ctc tct	528
Thr Tyr Lys Asn Thr Lys Thr Gly Glu Thr Asp Tyr Thr Tyr Leu Ser	
165 170 175	
aat ggg ggg ttg cct gca tac tat cgt aat ggg gtc gat ggt tga	573
Asn Gly Gly Leu Pro Ala Tyr Tyr Arg Asn Gly Val Asp Gly *	
180 185 190	

<210> 26
 <211> 190
 <212> PRT
 <213> vaccinia virus

<400> 26
 Met Met Ile Tyr Gly Leu Ile Ala Cys Leu Ile Phe Val Thr Ser Ser
 1 5 10 15
 Ile Ala Ser Pro Leu Tyr Ile Pro Val Ile Pro Pro Ile Thr Glu Asp
 20 25 30
 Lys Ser Phe Asn Ser Val Glu Val Leu Val Ser Leu Phe Arg Asp Asp
 35 40 45
 Gln Lys Asp Tyr Thr Val Thr Ser Gln Phe Asn Asn Tyr Thr Ile Asp
 50 55 60
 Thr Lys Asp Trp Thr Ile Gly Val Leu Ser Thr Pro Asp Gly Leu Asp
 65 70 75 80

Ile	Pro	Leu	Thr	Asn	Ile	Thr	Tyr	Trp	Ser	Arg	Phe	Thr	Ile	Gly	Arg	
				85					90					95		
Ala	Leu	Phe	Lys	Ser	Glu	Ser	Glu	Asp	Ile	Phe	Gln	Lys	Lys	Met	Ser	
			100					105					110			
Ile	Leu	Gly	Val	Ser	Ile	Glu	Cys	Lys	Lys	Ser	Ser	Thr	Leu	Leu	Thr	
		115					120					125				
Phe	Leu	Thr	Val	Arg	Lys	Met	Thr	Arg	Val	Phe	Asn	Lys	Phe	Pro	Asp	
	130					135					140					
Met	Ala	Tyr	Tyr	Arg	Gly	Asp	Cys	Leu	Lys	Ala	Val	Tyr	Val	Thr	Met	
145					150					155					160	
Thr	Tyr	Lys	Asn	Thr	Lys	Thr	Gly	Glu	Thr	Asp	Tyr	Thr	Tyr	Leu	Ser	
			165					170						175		
Asn	Gly	Gly	Leu	Pro	Ala	Tyr	Tyr	Arg	Asn	Gly	Val	Asp	Gly			
			180					185					190			

<210> 27
 <211> 1074
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1074)

<400> 27																
atg	gat	atc	ttt	aaa	gaa	cta	atc	gta	aaa	cac	cct	gat	gaa	aat	gtt	48
Met	Asp	Ile	Phe	Lys	Glu	Leu	Ile	Val	Lys	His	Pro	Asp	Glu	Asn	Val	
1				5					10					15		
ttg	att	tct	cca	gtt	tcc	att	tta	tct	act	tta	tct	att	cta	aat	cat	96
Leu	Ile	Ser	Pro	Val	Ser	Ile	Leu	Ser	Thr	Leu	Ser	Ile	Leu	Asn	His	
			20					25					30			
gga	gca	gct	ggt	tct	aca	gct	gaa	caa	cta	tca	aaa	tat	ata	gag	aat	144
Gly	Ala	Ala	Gly	Ser	Thr	Ala	Glu	Gln	Leu	Ser	Lys	Tyr	Ile	Glu	Asn	
		35					40					45				
atg	aat	gag	aat	aca	ccc	gat	gat	aag	aag	gat	gac	aat	aat	gac	atg	192
Met	Asn	Glu	Asn	Thr	Pro	Asp	Asp	Lys	Lys	Asp	Asp	Asn	Asn	Asp	Met	
	50					55					60					
gac	gta	gat	att	ccg	tat	tgt	gcg	aca	cta	gct	acc	gca	aat	aaa	ata	240
Asp	Val	Asp	Ile	Pro	Tyr	Cys	Ala	Thr	Leu	Ala	Thr	Ala	Asn	Lys	Ile	
	65				70					75					80	
tac	ggt	agc	gat	agt	atc	gag	ttc	cat	gcc	tcc	ttc	cta	caa	aaa	ata	288
Tyr	Gly	Ser	Asp	Ser	Ile	Glu	Phe	His	Ala	Ser	Phe	Leu	Gln	Lys	Ile	
				85					90					95		
aaa	gac	gat	ttt	caa	act	gta	aac	ttt	aat	aat	gct	aac	caa	aca	aag	336
Lys	Asp	Asp	Phe	Gln	Thr	Val	Asn	Phe	Asn	Asn	Ala	Asn	Gln	Thr	Lys	
			100					105					110			
gaa	cta	atc	aac	gaa	tgg	gtt	aag	aca	atg	aca	aat	ggt	aaa	att	aat	384
Glu	Leu	Ile	Asn	Glu	Trp	Val	Lys	Thr	Met	Thr	Asn	Gly	Lys	Ile	Asn	
		115					120					125				
tcc	tta	ttg	act	agt	ccg	cta	tcc	att	aat	act	cgt	atg	aca	gtt	gtt	432

Ser	Leu	Leu	Thr	Ser	Pro	Leu	Ser	Ile	Asn	Thr	Arg	Met	Thr	Val	Val		
130						135					140						
agc	gcc	gtc	cat	ttt	aaa	gca	atg	tgg	aaa	tat	cca	ttt	tct	aaa	cat	480	
Ser	Ala	Val	His	Phe	Lys	Ala	Met	Trp	Lys	Tyr	Pro	Phe	Ser	Lys	His		
145					150					155					160		
ctt	aca	tat	aca	gac	aag	ttt	tat	att	tct	aag	aat	ata	gtt	acc	agc	528	
Leu	Thr	Tyr	Thr	Asp	Lys	Phe	Tyr	Ile	Ser	Lys	Asn	Ile	Val	Thr	Ser		
				165					170					175			
gtt	gat	atg	atg	gtg	ggg	acc	gag	aat	aac	ttg	caa	tat	gta	cat	att	576	
Val	Asp	Met	Met	Val	Gly	Thr	Glu	Asn	Asn	Leu	Gln	Tyr	Val	His	Ile		
				180				185					190				
aat	gaa	tta	ttc	gga	gga	ttc	tct	att	atc	gat	att	cca	tac	gag	gga	624	
Asn	Glu	Leu	Phe	Gly	Gly	Phe	Ser	Ile	Ile	Asp	Ile	Pro	Tyr	Glu	Gly		
		195					200					205					
aac	tct	agt	atg	gtg	att	ata	cta	ccg	gac	gac	ata	gaa	ggg	ata	tat	672	
Asn	Ser	Ser	Met	Val	Ile	Ile	Leu	Pro	Asp	Asp	Ile	Glu	Gly	Ile	Tyr		
		210				215					220						
aac	ata	gaa	aaa	aat	ata	aca	gat	gaa	aaa	ttt	aaa	aaa	tgg	tgt	ggg	720	
Asn	Ile	Glu	Lys	Asn	Ile	Thr	Asp	Glu	Lys	Phe	Lys	Lys	Trp	Cys	Gly		
		225			230				235					240			
atg	tta	tct	act	aaa	agt	ata	gac	ttg	tat	atg	cca	aag	ttt	aaa	gtg	768	
Met	Leu	Ser	Thr	Lys	Ser	Ile	Asp	Leu	Tyr	Met	Pro	Lys	Phe	Lys	Val		
				245				250						255			
gaa	atg	aca	gaa	ccg	tat	aat	ctg	gta	cct	att	cta	gaa	aat	tta	gga	816	
Glu	Met	Thr	Glu	Pro	Tyr	Asn	Leu	Val	Pro	Ile	Leu	Glu	Asn	Leu	Gly		
				260				265					270				
ctt	act	aat	ata	ttc	gga	tat	tat	gca	gat	ttt	agc	aag	atg	tgt	aat	864	
Leu	Thr	Asn	Ile	Phe	Gly	Tyr	Tyr	Ala	Asp	Phe	Ser	Lys	Met	Cys	Asn		
		275					280					285					
gaa	act	atc	act	gta	gaa	aaa	ttt	cta	cat	acg	acg	ttt	ata	gat	gtt	912	
Glu	Thr	Ile	Thr	Val	Glu	Lys	Phe	Leu	His	Thr	Thr	Phe	Ile	Asp	Val		
		290				295					300						
aat	gag	gag	tat	aca	gaa	gca	tcg	gcc	gtt	aca	gga	gta	ttt	atg	act	960	
Asn	Glu	Glu	Tyr	Thr	Glu	Ala	Ser	Ala	Val	Thr	Gly	Val	Phe	Met	Thr		
					310				315					320			
aac	ttt	tcg	atg	gta	tat	cgt	acg	aag	gtc	tac	ata	aac	cat	cca	ttc	1008	
Asn	Phe	Ser	Met	Val	Tyr	Arg	Thr	Lys	Val	Tyr	Ile	Asn	His	Pro	Phe		
				325					330					335			
atg	tac	atg	att	aaa	gac	aac	aca	gga	cgt	ata	ctt	ttt	ata	ggg	aaa	1056	
Met	Tyr	Met	Ile	Lys	Asp	Asn	Thr	Gly	Arg	Ile	Leu	Phe	Ile	Gly	Lys		
				340				345					350				
tac	tgc	tat	ccg	caa	taa											1074	
Tyr	Cys	Tyr	Pro	Gln	*												
		355															

<210> 28
 <211> 357
 <212> PRT
 <213> vaccinia virus

<400> 28
 Met Asp Ile Phe Lys Glu Leu Ile Val Lys His Pro Asp Glu Asn Val
 1 5 10 15
 Leu Ile Ser Pro Val Ser Ile Leu Ser Thr Leu Ser Ile Leu Asn His
 20 25 30
 Gly Ala Ala Gly Ser Thr Ala Glu Gln Leu Ser Lys Tyr Ile Glu Asn
 35 40 45
 Met Asn Glu Asn Thr Pro Asp Asp Lys Lys Asp Asp Asn Asn Asp Met
 50 55 60
 Asp Val Asp Ile Pro Tyr Cys Ala Thr Leu Ala Thr Ala Asn Lys Ile
 65 70 75 80
 Tyr Gly Ser Asp Ser Ile Glu Phe His Ala Ser Phe Leu Gln Lys Ile
 85 90 95
 Lys Asp Asp Phe Gln Thr Val Asn Phe Asn Asn Ala Asn Gln Thr Lys
 100 105 110
 Glu Leu Ile Asn Glu Trp Val Lys Thr Met Thr Asn Gly Lys Ile Asn
 115 120 125
 Ser Leu Leu Thr Ser Pro Leu Ser Ile Asn Thr Arg Met Thr Val Val
 130 135 140
 Ser Ala Val His Phe Lys Ala Met Trp Lys Tyr Pro Phe Ser Lys His
 145 150 155 160
 Leu Thr Tyr Thr Asp Lys Phe Tyr Ile Ser Lys Asn Ile Val Thr Ser
 165 170 175
 Val Asp Met Met Val Gly Thr Glu Asn Asn Leu Gln Tyr Val His Ile
 180 185 190
 Asn Glu Leu Phe Gly Gly Phe Ser Ile Ile Asp Ile Pro Tyr Glu Gly
 195 200 205
 Asn Ser Ser Met Val Ile Ile Leu Pro Asp Asp Ile Glu Gly Ile Tyr
 210 215 220
 Asn Ile Glu Lys Asn Ile Thr Asp Glu Lys Phe Lys Lys Trp Cys Gly
 225 230 235 240
 Met Leu Ser Thr Lys Ser Ile Asp Leu Tyr Met Pro Lys Phe Lys Val
 245 250 255
 Glu Met Thr Glu Pro Tyr Asn Leu Val Pro Ile Leu Glu Asn Leu Gly
 260 265 270
 Leu Thr Asn Ile Phe Gly Tyr Tyr Ala Asp Phe Ser Lys Met Cys Asn
 275 280 285
 Glu Thr Ile Thr Val Glu Lys Phe Leu His Thr Thr Phe Ile Asp Val
 290 295 300
 Asn Glu Glu Tyr Thr Glu Ala Ser Ala Val Thr Gly Val Phe Met Thr
 305 310 315 320
 Asn Phe Ser Met Val Tyr Arg Thr Lys Val Tyr Ile Asn His Pro Phe
 325 330 335
 Met Tyr Met Ile Lys Asp Asn Thr Gly Arg Ile Leu Phe Ile Gly Lys
 340 345 350
 Tyr Cys Tyr Pro Gln
 355

<210> 29
 <211> 420
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(420)

<400> 29
 atg tcg atg aaa tat ctg atg ttg ttg ttc gct gct atg ata atc aga 48
 Met Ser Met Lys Tyr Leu Met Leu Leu Phe Ala Ala Met Ile Ile Arg
 1 5 10 15
 tca ttc gcc gat agt ggt aac gct atc gaa acg aca ttg cca gaa att 96
 Ser Phe Ala Asp Ser Gly Asn Ala Ile Glu Thr Thr Leu Pro Glu Ile
 20 25 30
 aca aac gct aca aca gat att cca gct atc aga tta tgc ggt cca gag 144
 Thr Asn Ala Thr Thr Asp Ile Pro Ala Ile Arg Leu Cys Gly Pro Glu
 35 40 45
 gga gat gga tat tgt tta cac ggt gac tgt atc cac gct aga gat atc 192
 Gly Asp Gly Tyr Cys Leu His Gly Asp Cys Ile His Ala Arg Asp Ile
 50 55 60
 gac ggt atg tat tgt aga tgc tct cat ggt tat aca ggc att aga tgt 240
 Asp Gly Met Tyr Cys Arg Cys Ser His Gly Tyr Thr Gly Ile Arg Cys
 65 70 75 80
 cag cat gta gta tta gta gac tat caa cgt tca gaa aaa cca aac act 288
 Gln His Val Val Leu Val Asp Tyr Gln Arg Ser Glu Lys Pro Asn Thr
 85 90 95
 aca acg tca tat atc cca tct ccc ggt att atg ctt gta tta gta ggc 336
 Thr Thr Ser Tyr Ile Pro Ser Pro Gly Ile Met Leu Val Leu Val Gly
 100 105 110
 att att att atg tgt tgt cta tta tct gtt tat agg ttc act cga cga 384
 Ile Ile Ile Met Cys Cys Leu Leu Ser Val Tyr Arg Phe Thr Arg Arg
 115 120 125
 act aaa cta cct cta caa gat atg gtt gtg cca taa 420
 Thr Lys Leu Pro Leu Gln Asp Met Val Val Pro *

<210> 30
 <211> 139
 <212> PRT
 <213> vaccinia virus

<400> 30
 Met Ser Met Lys Tyr Leu Met Leu Leu Phe Ala Ala Met Ile Ile Arg
 1 5 10 15
 Ser Phe Ala Asp Ser Gly Asn Ala Ile Glu Thr Thr Leu Pro Glu Ile
 20 25 30
 Thr Asn Ala Thr Thr Asp Ile Pro Ala Ile Arg Leu Cys Gly Pro Glu
 35 40 45
 Gly Asp Gly Tyr Cys Leu His Gly Asp Cys Ile His Ala Arg Asp Ile
 50 55 60
 Asp Gly Met Tyr Cys Arg Cys Ser His Gly Tyr Thr Gly Ile Arg Cys
 65 70 75 80
 Gln His Val Val Leu Val Asp Tyr Gln Arg Ser Glu Lys Pro Asn Thr

				85					90					95			
Thr	Thr	Ser	Tyr	Ile	Pro	Ser	Pro	Gly	Ile	Met	Leu	Val	Leu	Val	Gly		
			100					105					110				
Ile	Ile	Ile	Met	Cys	Cys	Leu	Leu	Ser	Val	Tyr	Arg	Phe	Thr	Arg	Arg		
		115					120					125					
Thr	Lys	Leu	Pro	Leu	Gln	Asp	Met	Val	Val	Pro							
	130					135											

<210> 31
 <211> 996
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(996)

<400> 31

atg	gat	att	tac	gac	gat	aaa	ggt	cta	cag	act	att	aaa	ctg	ttt	aat	48
Met	Asp	Ile	Tyr	Asp	Asp	Lys	Gly	Leu	Gln	Thr	Ile	Lys	Leu	Phe	Asn	
1				5				10					15			
aat	gaa	ttt	gat	tgt	ata	agg	aat	gac	atc	aga	gaa	tta	ttt	aaa	cat	96
Asn	Glu	Phe	Asp	Cys	Ile	Arg	Asn	Asp	Ile	Arg	Glu	Leu	Phe	Lys	His	
			20					25					30			
gta	act	gat	tcc	gat	agt	ata	caa	ctt	ccg	atg	gaa	gac	aat	tct	gat	144
Val	Thr	Asp	Ser	Asp	Ser	Ile	Gln	Leu	Pro	Met	Glu	Asp	Asn	Ser	Asp	
			35				40					45				
att	ata	gaa	aat	atc	aga	aaa	ata	cta	tat	aga	cga	tta	aaa	aat	gta	192
Ile	Ile	Glu	Asn	Ile	Arg	Lys	Ile	Leu	Tyr	Arg	Arg	Leu	Lys	Asn	Val	
		50				55					60					
gaa	tgt	gtt	gac	atc	gat	aac	aca	ata	act	ttt	atg	aaa	tac	gat	cca	240
Glu	Cys	Val	Asp	Ile	Asp	Asn	Thr	Ile	Thr	Phe	Met	Lys	Tyr	Asp	Pro	
65					70					75					80	
aat	gat	gat	aat	aag	cgt	acg	tgt	tct	aat	tgg	gta	ccc	tta	act	aat	288
Asn	Asp	Asp	Asn	Lys	Arg	Thr	Cys	Ser	Asn	Trp	Val	Pro	Leu	Thr	Asn	
				85					90					95		
aac	tat	atg	gaa	tat	tgt	cta	gta	ata	tat	ttg	gaa	aca	ccg	ata	tgt	336
Asn	Tyr	Met	Glu	Tyr	Cys	Leu	Val	Ile	Tyr	Leu	Glu	Thr	Pro	Ile	Cys	
			100					105					110			
gga	ggc	aaa	ata	aaa	tta	tac	cac	cct	aca	gga	aat	ata	aag	tcg	gat	384
Gly	Gly	Lys	Ile	Lys	Leu	Tyr	His	Pro	Thr	Gly	Asn	Ile	Lys	Ser	Asp	
		115					120					125				
aag	gat	att	atg	ttt	gca	aag	act	cta	gac	ttt	aaa	tca	aag	aaa	gtg	432
Lys	Asp	Ile	Met	Phe	Ala	Lys	Thr	Leu	Asp	Phe	Lys	Ser	Lys	Lys	Val	
	130					135					140					
tta	act	gga	cgt	aag	aca	att	gcc	gtt	cta	gac	ata	tcc	gtt	tca	tat	480
Leu	Thr	Gly	Arg	Lys	Thr	Ile	Ala	Val	Leu	Asp	Ile	Ser	Val	Ser	Tyr	
145					150					155					160	

aat aga tca ata act act att cac tac aac gac gac gtt gat ata gat	528
Asn Arg Ser Ile Thr Thr Ile His Tyr Asn Asp Asp Val Asp Ile Asp	
165 170 175	
ata cat act gat aaa aat gga aaa gag tta tgt tat tgt tat ata aca	576
Ile His Thr Asp Lys Asn Gly Lys Glu Leu Cys Tyr Cys Tyr Ile Thr	
180 185 190	
ata gat gat cat tac ttg gtt gat gtg gaa act ata gga gtt ata gtc	624
Ile Asp Asp His Tyr Leu Val Asp Val Glu Thr Ile Gly Val Ile Val	
195 200 205	
aat aga tct gga aaa tgt ctg tta gta aat aac cat cta ggt ata ggt	672
Asn Arg Ser Gly Lys Cys Leu Leu Val Asn Asn His Leu Gly Ile Gly	
210 215 220	
atc gtt aaa gat aaa cgt ata agc gat agt ttt gga gat gta tgt atg	720
Ile Val Lys Asp Lys Arg Ile Ser Asp Ser Phe Gly Asp Val Cys Met	
225 230 235 240	
gat aca ata ttt gac ttt tct gaa gca cga gag tta ttt tca tta act	768
Asp Thr Ile Phe Asp Phe Ser Glu Ala Arg Glu Leu Phe Ser Leu Thr	
245 250 255	
aat gat gat aac aga aat ata gca tgg gac act gat aaa cta gac gat	816
Asn Asp Asp Asn Arg Asn Ile Ala Trp Asp Thr Asp Lys Leu Asp Asp	
260 265 270	
gat aca gat ata tgg act ccc gtc aca gaa gat gat tac aaa ttt ctt	864
Asp Thr Asp Ile Trp Thr Pro Val Thr Glu Asp Asp Tyr Lys Phe Leu	
275 280 285	
tct aga cta gta ttg tat gca aaa tct caa tcg gat act gta ttc gac	912
Ser Arg Leu Val Leu Tyr Ala Lys Ser Gln Ser Asp Thr Val Phe Asp	
290 295 300	
tat tat gtt ctt act ggt gat acg gaa cca ccc act gta ttc att ttc	960
Tyr Tyr Val Leu Thr Gly Asp Thr Glu Pro Pro Thr Val Phe Ile Phe	
305 310 315 320	
aag gta act aga ttt tac ttt aat atg ctg aaa taa	996
Lys Val Thr Arg Phe Tyr Phe Asn Met Leu Lys *	
325 330	

<210> 32

<211> 331

<212> PRT

<213> vaccinia virus

<400> 32

Met Asp Ile Tyr Asp Asp Lys Gly Leu Gln Thr Ile Lys Leu Phe Asn	
1 5 10 15	
Asn Glu Phe Asp Cys Ile Arg Asn Asp Ile Arg Glu Leu Phe Lys His	
20 25 30	
Val Thr Asp Ser Asp Ser Ile Gln Leu Pro Met Glu Asp Asn Ser Asp	
35 40 45	
Ile Ile Glu Asn Ile Arg Lys Ile Leu Tyr Arg Arg Leu Lys Asn Val	
50 55 60	

Glu	Cys	Val	Asp	Ile	Asp	Asn	Thr	Ile	Thr	Phe	Met	Lys	Tyr	Asp	Pro
65					70					75					80
Asn	Asp	Asp	Asn	Lys	Arg	Thr	Cys	Ser	Asn	Trp	Val	Pro	Leu	Thr	Asn
			85						90					95	
Asn	Tyr	Met	Glu	Tyr	Cys	Leu	Val	Ile	Tyr	Leu	Glu	Thr	Pro	Ile	Cys
		100						105					110		
Gly	Gly	Lys	Ile	Lys	Leu	Tyr	His	Pro	Thr	Gly	Asn	Ile	Lys	Ser	Asp
	115					120						125			
Lys	Asp	Ile	Met	Phe	Ala	Lys	Thr	Leu	Asp	Phe	Lys	Ser	Lys	Lys	Val
	130					135					140				
Leu	Thr	Gly	Arg	Lys	Thr	Ile	Ala	Val	Leu	Asp	Ile	Ser	Val	Ser	Tyr
145					150					155					160
Asn	Arg	Ser	Ile	Thr	Thr	Ile	His	Tyr	Asn	Asp	Asp	Val	Asp	Ile	Asp
			165						170					175	
Ile	His	Thr	Asp	Lys	Asn	Gly	Lys	Glu	Leu	Cys	Tyr	Cys	Tyr	Ile	Thr
		180						185					190		
Ile	Asp	Asp	His	Tyr	Leu	Val	Asp	Val	Glu	Thr	Ile	Gly	Val	Ile	Val
	195						200					205			
Asn	Arg	Ser	Gly	Lys	Cys	Leu	Leu	Val	Asn	Asn	His	Leu	Gly	Ile	Gly
	210					215					220				
Ile	Val	Lys	Asp	Lys	Arg	Ile	Ser	Asp	Ser	Phe	Gly	Asp	Val	Cys	Met
225					230					235					240
Asp	Thr	Ile	Phe	Asp	Phe	Ser	Glu	Ala	Arg	Glu	Leu	Phe	Ser	Leu	Thr
			245						250					255	
Asn	Asp	Asp	Asn	Arg	Asn	Ile	Ala	Trp	Asp	Thr	Asp	Lys	Leu	Asp	Asp
			260					265					270		
Asp	Thr	Asp	Ile	Trp	Thr	Pro	Val	Thr	Glu	Asp	Asp	Tyr	Lys	Phe	Leu
	275						280					285			
Ser	Arg	Leu	Val	Leu	Tyr	Ala	Lys	Ser	Gln	Ser	Asp	Thr	Val	Phe	Asp
	290					295					300				
Tyr	Tyr	Val	Leu	Thr	Gly	Asp	Thr	Glu	Pro	Pro	Thr	Val	Phe	Ile	Phe
305					310					315					320
Lys	Val	Thr	Arg	Phe	Tyr	Phe	Asn	Met	Leu	Lys					
			325						330						

<210> 33
 <211> 252
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(252)

<400> 33																
atg	cat	tat	ccg	aaa	tat	tat	atc	aat	atc	aca	aaa	ata	aat	cca	cat	48
Met	His	Tyr	Pro	Lys	Tyr	Tyr	Ile	Asn	Ile	Thr	Lys	Ile	Asn	Pro	His	
1				5					10					15		
ttg	gct	aat	caa	ttt	cgg	gct	tgg	aaa	aaa	cgt	atc	gcc	gga	agg	gac	96
Leu	Ala	Asn	Gln	Phe	Arg	Ala	Trp	Lys	Lys	Arg	Ile	Ala	Gly	Arg	Asp	
			20					25					30			
tat	atg	act	aac	tta	tct	aga	gat	aca	gga	ata	caa	caa	tca	aaa	ctt	144
Tyr	Met	Thr	Asn	Leu	Ser	Arg	Asp	Thr	Gly	Ile	Gln	Gln	Ser	Lys	Leu	
		35					40					45				
act	gaa	act	ata	cgt	aac	tgt	caa	aaa	aat	aga	aac	ata	tat	ggt	cta	192

Thr	Glu	Thr	Ile	Arg	Asn	Cys	Gln	Lys	Asn	Arg	Asn	Ile	Tyr	Gly	Leu	
	50					55					60					
tat	ata	cac	tac	aat	tta	gtt	att	aat	tgg	ata	acc	gat	gtg	att	atc	240
Tyr	Ile	His	Tyr	Asn	Leu	Val	Ile	Asn	Trp	Ile	Thr	Asp	Val	Ile	Ile	
	65				70				75						80	
aat	caa	tat	taa													252
Asn	Gln	Tyr	*													

<210> 34
 <211> 83
 <212> PRT
 <213> vaccinia virus

Met	His	Tyr	Pro	Lys	Tyr	Tyr	Ile	Asn	Ile	Thr	Lys	Ile	Asn	Pro	His	
1				5					10					15		
Leu	Ala	Asn	Gln	Phe	Arg	Ala	Trp	Lys	Lys	Arg	Ile	Ala	Gly	Arg	Asp	
			20					25					30			
Tyr	Met	Thr	Asn	Leu	Ser	Arg	Asp	Thr	Gly	Ile	Gln	Gln	Ser	Lys	Leu	
		35					40					45				
Thr	Glu	Thr	Ile	Arg	Asn	Cys	Gln	Lys	Asn	Arg	Asn	Ile	Tyr	Gly	Leu	
	50					55					60					
Tyr	Ile	His	Tyr	Asn	Leu	Val	Ile	Asn	Trp	Ile	Thr	Asp	Val	Ile	Ile	
	65				70				75						80	
Asn	Gln	Tyr														

<210> 35
 <211> 189
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(189)

atg	aag	ttg	ttt	act	caa	aac	gat	aga	tac	ttt	ggt	tta	ttg	gat	tcg	48
Met	Lys	Leu	Phe	Thr	Gln	Asn	Asp	Arg	Tyr	Phe	Gly	Leu	Leu	Asp	Ser	
1				5					10					15		
tgt	aat	cat	ata	ttt	tgc	ata	aca	tgt	atc	aat	ata	tgg	cat	aaa	aca	96
Cys	Asn	His	Ile	Phe	Cys	Ile	Thr	Cys	Ile	Asn	Ile	Trp	His	Lys	Thr	
			20					25					30			
cga	aga	gaa	acc	ggt	gcg	tcg	gat	aat	tgt	cct	ata	tgt	cgt	acc	cgt	144
Arg	Arg	Glu	Thr	Gly	Ala	Ser	Asp	Asn	Cys	Pro	Ile	Cys	Arg	Thr	Arg	
		35					40					45				
ttt	aga	aac	ata	aca	atg	agc	aag	ttc	tat	aag	cta	gtt	aac	taa		189
Phe	Arg	Asn	Ile	Thr	Met	Ser	Lys	Phe	Tyr	Lys	Leu	Val	Asn	*		
	50					55					60					

<210> 36
 <211> 62
 <212> PRT
 <213> vaccinia virus

<400> 36
 Met Lys Leu Phe Thr Gln Asn Asp Arg Tyr Phe Gly Leu Leu Asp Ser
 1 5 10 15
 Cys Asn His Ile Phe Cys Ile Thr Cys Ile Asn Ile Trp His Lys Thr
 20 25 30
 Arg Arg Glu Thr Gly Ala Ser Asp Asn Cys Pro Ile Cys Arg Thr Arg
 35 40 45
 Phe Arg Asn Ile Thr Met Ser Lys Phe Tyr Lys Leu Val Asn
 50 55 60

<210> 37
 <211> 375
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(375)

<400> 37
 atg aga atc cta ttt ctc atc gcc ttc atg tat ggg tgt gtt cac cca 48
 Met Arg Ile Leu Phe Leu Ile Ala Phe Met Tyr Gly Cys Val His Pro
 1 5 10 15
 tat gtt aat gcc gac gaa atc aaa tgt cct aac cta aac atc gta aca 96
 Tyr Val Asn Ala Asp Glu Ile Lys Cys Pro Asn Leu Asn Ile Val Thr
 20 25 30
 tct tct gga gaa ttt cgt tgc act gga tgt gtg aaa ttt atg cct aat 144
 Ser Ser Gly Glu Phe Arg Cys Thr Gly Cys Val Lys Phe Met Pro Asn
 35 40 45
 ttt agc tac atg tat tgg ttg gca aag gat atg aga tcg gac gag gat 192
 Phe Ser Tyr Met Tyr Trp Leu Ala Lys Asp Met Arg Ser Asp Glu Asp
 50 55 60
 acc aag ttt ata gaa cat ctg ggt gat ggc atc aaa gaa gat gaa acc 240
 Thr Lys Phe Ile Glu His Leu Gly Asp Gly Ile Lys Glu Asp Glu Thr
 65 70 75 80
 gtt cgt acc ata gat ggt aga atc gtc act cta cag aaa gtc ctt cat 288
 Val Arg Thr Ile Asp Gly Arg Ile Val Thr Leu Gln Lys Val Leu His
 85 90 95
 gta acc gat act aat aaa ttt gct cat tat agg ttc act tgt gtc ctc 336
 Val Thr Asp Thr Asn Lys Phe Ala His Tyr Arg Phe Thr Cys Val Leu
 100 105 110
 act acg ata gat ggc att tat aaa aag aat gtt tgc tga 375
 Thr Thr Ile Asp Gly Ile Tyr Lys Lys Asn Val Cys *
 115 120

<210> 38
 <211> 124
 <212> PRT
 <213> vaccinia virus

<400> 38
 Met Arg Ile Leu Phe Leu Ile Ala Phe Met Tyr Gly Cys Val His Pro
 1 5 10 15
 Tyr Val Asn Ala Asp Glu Ile Lys Cys Pro Asn Leu Asn Ile Val Thr
 20 25 30
 Ser Ser Gly Glu Phe Arg Cys Thr Gly Cys Val Lys Phe Met Pro Asn
 35 40 45
 Phe Ser Tyr Met Tyr Trp Leu Ala Lys Asp Met Arg Ser Asp Glu Asp
 50 55 60
 Thr Lys Phe Ile Glu His Leu Gly Asp Gly Ile Lys Glu Asp Glu Thr
 65 70 75 80
 Val Arg Thr Ile Asp Gly Arg Ile Val Thr Leu Gln Lys Val Leu His
 85 90 95
 Val Thr Asp Thr Asn Lys Phe Ala His Tyr Arg Phe Thr Cys Val Leu
 100 105 110
 Thr Thr Ile Asp Gly Ile Tyr Lys Lys Asn Val Cys
 115 120

<210> 39
 <211> 273
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(273)

<400> 39
 atg aaa aaa ata atg gta ggt ggt aat act atg ttc tca tta ata ttt 48
 Met Lys Lys Ile Met Val Gly Gly Asn Thr Met Phe Ser Leu Ile Phe
 1 5 10 15
 act gat cat gga gct aaa att att cat aga tat gcc aat aat cca gaa 96
 Thr Asp His Gly Ala Lys Ile Ile His Arg Tyr Ala Asn Asn Pro Glu
 20 25 30
 tta cgt gag tat tat gag tta aaa caa aat aaa ata tat gtg gaa gca 144
 Leu Arg Glu Tyr Tyr Glu Leu Lys Gln Asn Lys Ile Tyr Val Glu Ala
 35 40 45
 tat gat att att tcc aac gca ata gtg aaa cat gat aga ata cat aaa 192
 Tyr Asp Ile Ile Ser Asn Ala Ile Val Lys His Asp Arg Ile His Lys
 50 55 60
 acc ata gaa tca gtt gat gat aat acc tac att tct aat ctt ccg tat 240
 Thr Ile Glu Ser Val Asp Asp Asn Thr Tyr Ile Ser Asn Leu Pro Tyr
 65 70 75 80
 acc atc aaa tac aaa ata ttc gag caa caa taa 273
 Thr Ile Lys Tyr Lys Ile Phe Glu Gln Gln *
 85 90

<210> 40
 <211> 90
 <212> PRT
 <213> vaccinia virus

<400> 40
 Met Lys Lys Ile Met Val Gly Gly Asn Thr Met Phe Ser Leu Ile Phe
 1 5 10 15
 Thr Asp His Gly Ala Lys Ile Ile His Arg Tyr Ala Asn Asn Pro Glu
 20 25 30
 Leu Arg Glu Tyr Tyr Glu Leu Lys Gln Asn Lys Ile Tyr Val Glu Ala
 35 40 45
 Tyr Asp Ile Ile Ser Asn Ala Ile Val Lys His Asp Arg Ile His Lys
 50 55 60
 Thr Ile Glu Ser Val Asp Asp Asn Thr Tyr Ile Ser Asn Leu Pro Tyr
 65 70 75 80
 Thr Ile Lys Tyr Lys Ile Phe Glu Gln Gln
 85 90

<210> 41
 <211> 429
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(429)

<400> 41
 atg tct tat gct tgc cca att ctt agt act ata aac att tgc cta cct 48
 Met Ser Tyr Ala Cys Pro Ile Leu Ser Thr Ile Asn Ile Cys Leu Pro
 1 5 10 15
 tat ctt aaa gac att aac atg att gac aaa cga gga gaa aca ctt ctt 96
 Tyr Leu Lys Asp Ile Asn Met Ile Asp Lys Arg Gly Glu Thr Leu Leu
 20 25 30
 cac aag gct gtt aga tat aat aaa caa tct cta gta tct tta ctg cta 144
 His Lys Ala Val Arg Tyr Asn Lys Gln Ser Leu Val Ser Leu Leu Leu
 35 40 45
 gaa tcc ggt tca gat gtc aac att aga tca aat aac gga tat aca tgt 192
 Glu Ser Gly Ser Asp Val Asn Ile Arg Ser Asn Asn Gly Tyr Thr Cys
 50 55 60
 ata gcc att gcc atc aac gaa tct aaa aac att gaa ctg ctg aaa atg 240
 Ile Ala Ile Ala Ile Asn Glu Ser Lys Asn Ile Glu Leu Leu Lys Met
 65 70 75 80
 cta tta tgt cat aaa cct aca tta gat tat gtg att gat tca ttg aga 288
 Leu Leu Cys His Lys Pro Thr Leu Asp Tyr Val Ile Asp Ser Leu Arg
 85 90 95
 gaa ata tct aac atc gta gat aac tac tat gct ata aaa caa tgt att 336
 Glu Ile Ser Asn Ile Val Asp Asn Tyr Tyr Ala Ile Lys Gln Cys Ile
 100 105 110
 aaa tat gcc atg att ata gat gac tgt aca tcg tct aag att cca gag 384

Lys Tyr Ala Met Ile Ile Asp Asp Cys Thr Ser Ser Lys Ile Pro Glu
 115 120 125

tcc ata agt caa cgc tat aat gat tat ata gat ctt tgc aat taa 429
 Ser Ile Ser Gln Arg Tyr Asn Asp Tyr Ile Asp Leu Cys Asn *
 130 135 140

<210> 42
 <211> 142
 <212> PRT
 <213> vaccinia virus

<400> 42
 Met Ser Tyr Ala Cys Pro Ile Leu Ser Thr Ile Asn Ile Cys Leu Pro
 1 5 10 15
 Tyr Leu Lys Asp Ile Asn Met Ile Asp Lys Arg Gly Glu Thr Leu Leu
 20 25 30
 His Lys Ala Val Arg Tyr Asn Lys Gln Ser Leu Val Ser Leu Leu Leu
 35 40 45
 Glu Ser Gly Ser Asp Val Asn Ile Arg Ser Asn Asn Gly Tyr Thr Cys
 50 55 60
 Ile Ala Ile Ala Ile Asn Glu Ser Lys Asn Ile Glu Leu Leu Lys Met
 65 70 75 80
 Leu Leu Cys His Lys Pro Thr Leu Asp Tyr Val Ile Asp Ser Leu Arg
 85 90 95
 Glu Ile Ser Asn Ile Val Asp Asn Tyr Tyr Ala Ile Lys Gln Cys Ile
 100 105 110
 Lys Tyr Ala Met Ile Ile Asp Asp Cys Thr Ser Ser Lys Ile Pro Glu
 115 120 125
 Ser Ile Ser Gln Arg Tyr Asn Asp Tyr Ile Asp Leu Cys Asn
 130 135 140

<210> 43
 <211> 405
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(405)

<400> 43
 atg aaa gga ata gat aac act gct tat tca tat ata gac gat cta aca 48
 Met Lys Gly Ile Asp Asn Thr Ala Tyr Ser Tyr Ile Asp Asp Leu Thr
 1 5 10 15
 tgt tgc act cga gga att atg gct gat tat cta aat agt gat tat aga 96
 Cys Cys Thr Arg Gly Ile Met Ala Asp Tyr Leu Asn Ser Asp Tyr Arg
 20 25 30
 tac aat aaa gat gta gat ttg gtc aaa ttg ttt ttg gag aat gga aag 144
 Tyr Asn Lys Asp Val Asp Leu Val Lys Leu Phe Leu Glu Asn Gly Lys
 35 40 45
 cct cac gga ata atg tgt agt att gta cca cta tgg aga aat gat aag 192
 Pro His Gly Ile Met Cys Ser Ile Val Pro Leu Trp Arg Asn Asp Lys

50	55	60	
gaa acc atc ttt ttg ata ttg aaa aca atg aac tcg gat gtc ctc caa			240
Glu Thr Ile Phe Leu Ile Leu Lys Thr Met Asn Ser Asp Val Leu Gln			
65	70	75	80
cat ata cta att gag tat atg aca ttc ggc gat atc cct cta gtg gaa			288
His Ile Leu Ile Glu Tyr Met Thr Phe Gly Asp Ile Pro Leu Val Glu			
	85	90	95
tat gga act gtg gta aat aaa gag gct ata cac gga tac ttt aga aat			336
Tyr Gly Thr Val Val Asn Lys Glu Ala Ile His Gly Tyr Phe Arg Asn			
	100	105	110
att aat att gat tct tac acg atg aaa tat cta cta aaa aag gaa ggg			384
Ile Asn Ile Asp Ser Tyr Thr Met Lys Tyr Leu Leu Lys Lys Glu Gly			
	115	120	125
aga tgc cat caa tta tct cga			405
Arg Cys His Gln Leu Ser Arg			
130	135		

<210> 44
 <211> 135
 <212> PRT
 <213> vaccinia virus

<400> 44

Met Lys Gly Ile Asp Asn Thr Ala Tyr Ser Tyr Ile Asp Asp Leu Thr			
1	5	10	15
Cys Cys Thr Arg Gly Ile Met Ala Asp Tyr Leu Asn Ser Asp Tyr Arg			
	20	25	30
Tyr Asn Lys Asp Val Asp Leu Val Lys Leu Phe Leu Glu Asn Gly Lys			
	35	40	45
Pro His Gly Ile Met Cys Ser Ile Val Pro Leu Trp Arg Asn Asp Lys			
	50	55	60
Glu Thr Ile Phe Leu Ile Leu Lys Thr Met Asn Ser Asp Val Leu Gln			
65	70	75	80
His Ile Leu Ile Glu Tyr Met Thr Phe Gly Asp Ile Pro Leu Val Glu			
	85	90	95
Tyr Gly Thr Val Val Asn Lys Glu Ala Ile His Gly Tyr Phe Arg Asn			
	100	105	110
Ile Asn Ile Asp Ser Tyr Thr Met Lys Tyr Leu Leu Lys Lys Glu Gly			
	115	120	125
Arg Cys His Gln Leu Ser Arg			
130	135		

<210> 45
 <211> 234
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(234)

<400> 45

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atg tta aag tta aag gat ata gcg atg gct cta cta gaa gcc act gga 48
Met Leu Lys Leu Lys Asp Ile Ala Met Ala Leu Leu Glu Ala Thr Gly
  1           5           10           15

ttt agc aac ata aat gac ttt aat ata ttc agc tat atg aaa tcc aaa 96
Phe Ser Asn Ile Asn Asp Phe Asn Ile Phe Ser Tyr Met Lys Ser Lys
          20           25           30

aat gta gac gtt gac ttg ata aag gtg ttg gta gaa cat gga ttt gac 144
Asn Val Asp Val Asp Leu Ile Lys Val Leu Val Glu His Gly Phe Asp
          35           40           45

ttg agt gtt aaa tgt gaa aac cat cgt tca gtt ata gaa aat tat gta 192
Leu Ser Val Lys Cys Glu Asn His Arg Ser Val Ile Glu Asn Tyr Val
          50           55           60

atg aca atg atc ctg ttc cta aaa tta ttg att tgt tca tag 234
Met Thr Met Ile Leu Phe Leu Lys Leu Leu Ile Cys Ser *
  65           70           75

```

<210> 46
 <211> 77
 <212> PRT
 <213> vaccinia virus

```

<400> 46
Met Leu Lys Leu Lys Asp Ile Ala Met Ala Leu Leu Glu Ala Thr Gly
  1           5           10           15
Phe Ser Asn Ile Asn Asp Phe Asn Ile Phe Ser Tyr Met Lys Ser Lys
          20           25           30
Asn Val Asp Val Asp Leu Ile Lys Val Leu Val Glu His Gly Phe Asp
          35           40           45
Leu Ser Val Lys Cys Glu Asn His Arg Ser Val Ile Glu Asn Tyr Val
          50           55           60
Met Thr Met Ile Leu Phe Leu Lys Leu Leu Ile Cys Ser
  65           70           75

```

<210> 47
 <211> 216
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(216)

```

<400> 47
atg ttt gac tat ttg gaa aat gag gag gtg gct ctc gat gaa ctt aaa 48
Met Phe Asp Tyr Leu Glu Asn Glu Glu Val Ala Leu Asp Glu Leu Lys
  1           5           10           15

cag atg ttg aga gac aga gat cct aat gat acc agg aac caa ttc aag 96
Gln Met Leu Arg Asp Arg Asp Pro Asn Asp Thr Arg Asn Gln Phe Lys
          20           25           30

aat aat gct tta cac gca tac ctt ttt aat gag cat tgt aat aat gtc 144

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```

Asn Asn Ala Leu His Ala Tyr Leu Phe Asn Glu His Cys Asn Asn Val
    35                      40                      45

gag gtc gtc aaa cta cta cta gac agt ggc act aat cca tta cgc aaa 192
Glu Val Val Lys Leu Leu Leu Asp Ser Gly Thr Asn Pro Leu Arg Lys
    50                      55                      60

aat tgg aga cag cta ccc cat tag
Asn Trp Arg Gln Leu Pro His *
    65                      70

```

```

<210> 48
<211> 71
<212> PRT
<213> vaccinia virus

```

```

<400> 48
Met Phe Asp Tyr Leu Glu Asn Glu Glu Val Ala Leu Asp Glu Leu Lys
 1          5          10          15
Gln Met Leu Arg Asp Arg Asp Pro Asn Asp Thr Arg Asn Gln Phe Lys
    20          25          30
Asn Asn Ala Leu His Ala Tyr Leu Phe Asn Glu His Cys Asn Asn Val
    35          40          45
Glu Val Val Lys Leu Leu Leu Asp Ser Gly Thr Asn Pro Leu Arg Lys
    50          55          60
Asn Trp Arg Gln Leu Pro His
65          70

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<210> 49
<211> 165
<212> DNA
<213> vaccinia virus

```

```

<220>
<221> CDS
<222> (1)...(165)

```

```

<400> 49
atg tct tct aaa ggg ggt agt ggc ggc atg tgg agt gtc ttt atc cat 48
Met Ser Ser Lys Gly Gly Ser Gly Gly Met Trp Ser Val Phe Ile His
 1          5          10          15

gga cat gat ggt agt aat aaa gga tct aaa act tat aca tct ggt ggc 96
Gly His Asp Gly Ser Asn Lys Gly Ser Lys Thr Tyr Thr Ser Gly Gly
    20          25          30

ggt gga atg tgg gga gga gga tcg tcc agt ggg gtt aac gga ggt gta 144
Gly Gly Met Trp Gly Gly Gly Ser Ser Ser Gly Val Asn Gly Gly Val
    35          40          45

aaa tct gga act ggt aaa att
Lys Ser Gly Thr Gly Lys Ile
    50          55

```

```

<210> 50
<211> 55

```


<212> PRT
 <213> vaccinia virus

<400> 50
 Met Ser Ser Lys Gly Gly Ser Gly Gly Met Trp Ser Val Phe Ile His
 1 5 10 15
 Gly His Asp Gly Ser Asn Lys Gly Ser Lys Thr Tyr Thr Ser Gly Gly
 20 25 30
 Gly Gly Met Trp Gly Gly Gly Ser Ser Ser Gly Val Asn Gly Gly Val
 35 40 45
 Lys Ser Gly Thr Gly Lys Ile
 50 55

<210> 51
 <211> 1902
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1902)

<400> 51
 atg gtt aac gat aag ata ctc tat gat agt tgt aaa aca ttt aac atc 48
 Met Val Asn Asp Lys Ile Leu Tyr Asp Ser Cys Lys Thr Phe Asn Ile
 1 5 10 15
 gat gcc agc agt gca caa tca ttg ata gaa agt ggt gca aat cca tta 96
 Asp Ala Ser Ser Ala Gln Ser Leu Ile Glu Ser Gly Ala Asn Pro Leu
 20 25 30
 tat gag tat gat ggt gaa act cca tta aag gca tac gtt acc aag aaa 144
 Tyr Glu Tyr Asp Gly Glu Thr Pro Leu Lys Ala Tyr Val Thr Lys Lys
 35 40 45
 aat aat aat atc aaa aac gat gtt gtg att ttg tta ttg tcg tca gtc 192
 Asn Asn Asn Ile Lys Asn Asp Val Val Ile Leu Leu Leu Ser Ser Val
 50 55 60
 gac tat aaa aat atc aat gat ttt gat ata ttc gaa tat cta tgt tct 240
 Asp Tyr Lys Asn Ile Asn Asp Phe Asp Ile Phe Glu Tyr Leu Cys Ser
 65 70 75 80
 gat aac atc gat ata gac tta ttg aaa tta cta att tcg aaa ggt ata 288
 Asp Asn Ile Asp Ile Asp Leu Leu Lys Leu Leu Ile Ser Lys Gly Ile
 85 90 95
 gaa ata aat agt atc aaa aat ggt att aat att gta gaa aaa tac gct 336
 Glu Ile Asn Ser Ile Lys Asn Gly Ile Asn Ile Val Glu Lys Tyr Ala
 100 105 110
 aca aca tca aat ccc aat gta gat gtg ttt aaa cta tta ttg gat aaa 384
 Thr Thr Ser Asn Pro Asn Val Asp Val Phe Lys Leu Leu Leu Asp Lys
 115 120 125
 gga ata cct aca tgt agc aac ata cag tat gga tac aag atc aaa ata 432
 Gly Ile Pro Thr Cys Ser Asn Ile Gln Tyr Gly Tyr Lys Ile Lys Ile
 130 135 140

gaa cag att aga cgt gct ggt gaa tat tat aat tgg gat gat gaa tta	480
Glu Gln Ile Arg Arg Ala Gly Glu Tyr Tyr Asn Trp Asp Asp Glu Leu	
145 150 155 160	
gac gat tac gat tac gac tac acc act gat tat gat gat aga atg ggt	528
Asp Asp Tyr Asp Tyr Asp Tyr Thr Thr Asp Tyr Asp Asp Arg Met Gly	
165 170 175	
aaa aca gtt ctc tat tat tat att att act agg tca caa gat ggt tat	576
Lys Thr Val Leu Tyr Tyr Tyr Ile Ile Thr Arg Ser Gln Asp Gly Tyr	
180 185 190	
gct aca tct ttg gac gtg ata aac tat tta att tca cac gaa aaa gag	624
Ala Thr Ser Leu Asp Val Ile Asn Tyr Leu Ile Ser His Glu Lys Glu	
195 200 205	
atg cgt tat tat act tat cgt gaa cat acc aca ctc tat tat tat ctt	672
Met Arg Tyr Tyr Thr Tyr Arg Glu His Thr Thr Leu Tyr Tyr Tyr Leu	
210 215 220	
gac aaa tgc gat att aaa cgg gaa ata ttt gac gcg tta ttc gat agt	720
Asp Lys Cys Asp Ile Lys Arg Glu Ile Phe Asp Ala Leu Phe Asp Ser	
225 230 235 240	
aac tat agt ggt cat gaa cta atg aat att cta tct aac tat tta cgt	768
Asn Tyr Ser Gly His Glu Leu Met Asn Ile Leu Ser Asn Tyr Leu Arg	
245 250 255	
aaa cag ttt agg aag aaa aat cac aaa atc gat aat tat ata gtt gat	816
Lys Gln Phe Arg Lys Lys Asn His Lys Ile Asp Asn Tyr Ile Val Asp	
260 265 270	
caa cta tta ttc gac cgt gat acg ttt tat att tta gaa ttg tgt aat	864
Gln Leu Leu Phe Asp Arg Asp Thr Phe Tyr Ile Leu Glu Leu Cys Asn	
275 280 285	
agt tta cgt aat aat atc cta ata tcc aca att ctt aaa aga tat aca	912
Ser Leu Arg Asn Asn Ile Leu Ile Ser Thr Ile Leu Lys Arg Tyr Thr	
290 295 300	
gat tct ata caa gat cta ttg tta gaa tat gta tct tat cat aca gta	960
Asp Ser Ile Gln Asp Leu Leu Leu Glu Tyr Val Ser Tyr His Thr Val	
305 310 315 320	
tac atc aat gtt att aaa tgt atg att gat gaa gga gct aca tta tat	1008
Tyr Ile Asn Val Ile Lys Cys Met Ile Asp Glu Gly Ala Thr Leu Tyr	
325 330 335	
aga ttt aag cat ata aat aaa tat ttt caa aaa ttt ggc aat aga gat	1056
Arg Phe Lys His Ile Asn Lys Tyr Phe Gln Lys Phe Gly Asn Arg Asp	
340 345 350	
cct aaa gtt gtc gag tat att tta aaa aat gga aac tta gtt gta aat	1104
Pro Lys Val Val Glu Tyr Ile Leu Lys Asn Gly Asn Leu Val Val Asn	
355 360 365	
aat gac aat gat gat aac cta ata aat att atg cca tta ttc cct acc	1152
Asn Asp Asn Asp Asp Asn Leu Ile Asn Ile Met Pro Leu Phe Pro Thr	

370	375	380	
ttc tct atg cgt gag ttg gat gtg tta tcg ata cta aaa ctt tgt aag			1200
Phe Ser Met Arg Glu Leu Asp Val Leu Ser Ile Leu Lys Leu Cys Lys			
385	390	395	400
ccg tat att aat gat ata aac aaa ata gat aaa cat gga tgt agt ata			1248
Pro Tyr Ile Asn Asp Ile Asn Lys Ile Asp Lys His Gly Cys Ser Ile			
	405	410	415
ctt tat cat tgt att aag tcg cat agt gtc agc cta gta gaa tgg tta			1296
Leu Tyr His Cys Ile Lys Ser His Ser Val Ser Leu Val Glu Trp Leu			
	420	425	430
ata gat aat ggc aca gac att aat ata ata aca aaa tat ggg ttt aca			1344
Ile Asp Asn Gly Thr Asp Ile Asn Ile Ile Thr Lys Tyr Gly Phe Thr			
	435	440	445
tgt att act att tgt gtt ata ctg gca gat aaa tat att cca gaa ata			1392
Cys Ile Thr Ile Cys Val Ile Leu Ala Asp Lys Tyr Ile Pro Glu Ile			
	450	455	460
gca gaa tta tat att aag ata ttg gaa att att ctg agt aaa tta cca			1440
Ala Glu Leu Tyr Ile Lys Ile Leu Glu Ile Ile Leu Ser Lys Leu Pro			
	465	470	480
acc atc gaa tgt att aag aaa aca gtt gat tac cta gac gat cac agg			1488
Thr Ile Glu Cys Ile Lys Lys Thr Val Asp Tyr Leu Asp Asp His Arg			
	485	490	495
tac tta ttc ata ggt ggt aat aat aaa tcg tta ctg aaa ata tgt atc			1536
Tyr Leu Phe Ile Gly Gly Asn Asn Lys Ser Leu Leu Lys Ile Cys Ile			
	500	505	510
aag tac ttc ata tta gtc gat tat aag tac aca tgt agc atg tat cca			1584
Lys Tyr Phe Ile Leu Val Asp Tyr Lys Tyr Thr Cys Ser Met Tyr Pro			
	515	520	525
tca tat ata gaa ttt ata acc gac tgc gaa aaa gaa att gcg gat atg			1632
Ser Tyr Ile Glu Phe Ile Thr Asp Cys Glu Lys Glu Ile Ala Asp Met			
	530	535	540
cgt caa att aaa ata aat ggt acg gac atg ctt aca gtg atg tac atg			1680
Arg Gln Ile Lys Ile Asn Gly Thr Asp Met Leu Thr Val Met Tyr Met			
	545	550	560
tta aat aaa cct aca aag aaa cga tat gtt aat aat ccg ata ttt aca			1728
Leu Asn Lys Pro Thr Lys Lys Arg Tyr Val Asn Asn Pro Ile Phe Thr			
	565	570	575
gat tgg gct aat aag caa tat aag ttt tat aat caa ata ata tat aat			1776
Asp Trp Ala Asn Lys Gln Tyr Lys Phe Tyr Asn Gln Ile Ile Tyr Asn			
	580	585	590
gct aat aag tta ata gaa caa agt aag aaa ata gac gac atg ata gag			1824
Ala Asn Lys Leu Ile Glu Gln Ser Lys Lys Ile Asp Asp Met Ile Glu			
	595	600	605
gag gta tcc att gac gat aat cgt tta tca aca cta ccg tta gaa att			1872

Glu Val Ser Ile Asp Asp Asn Arg Leu Ser Thr Leu Pro Leu Glu Ile
 610 615 620

aga cat ttg att ttc tcg tac gcg ttc cta
 Arg His Leu Ile Phe Ser Tyr Ala Phe Leu
 625 630

1902

<210> 52
 <211> 634
 <212> PRT
 <213> vaccinia virus

<400> 52
 Met Val Asn Asp Lys Ile Leu Tyr Asp Ser Cys Lys Thr Phe Asn Ile
 1 5 10 15
 Asp Ala Ser Ser Ala Gln Ser Leu Ile Glu Ser Gly Ala Asn Pro Leu
 20 25 30
 Tyr Glu Tyr Asp Gly Glu Thr Pro Leu Lys Ala Tyr Val Thr Lys Lys
 35 40 45
 Asn Asn Asn Ile Lys Asn Asp Val Val Ile Leu Leu Leu Ser Ser Val
 50 55 60
 Asp Tyr Lys Asn Ile Asn Asp Phe Asp Ile Phe Glu Tyr Leu Cys Ser
 65 70 75 80
 Asp Asn Ile Asp Ile Asp Leu Leu Lys Leu Ile Ser Lys Gly Ile
 85 90 95
 Glu Ile Asn Ser Ile Lys Asn Gly Ile Asn Ile Val Glu Lys Tyr Ala
 100 105 110
 Thr Thr Ser Asn Pro Asn Val Asp Val Phe Lys Leu Leu Leu Asp Lys
 115 120 125
 Gly Ile Pro Thr Cys Ser Asn Ile Gln Tyr Gly Tyr Lys Ile Lys Ile
 130 135 140
 Glu Gln Ile Arg Arg Ala Gly Glu Tyr Tyr Asn Trp Asp Asp Glu Leu
 145 150 155 160
 Asp Asp Tyr Asp Tyr Asp Tyr Thr Thr Asp Tyr Asp Asp Arg Met Gly
 165 170 175
 Lys Thr Val Leu Tyr Tyr Tyr Ile Ile Thr Arg Ser Gln Asp Gly Tyr
 180 185 190
 Ala Thr Ser Leu Asp Val Ile Asn Tyr Leu Ile Ser His Glu Lys Glu
 195 200 205
 Met Arg Tyr Tyr Thr Tyr Arg Glu His Thr Thr Leu Tyr Tyr Tyr Leu
 210 215 220
 Asp Lys Cys Asp Ile Lys Arg Glu Ile Phe Asp Ala Leu Phe Asp Ser
 225 230 235 240
 Asn Tyr Ser Gly His Glu Leu Met Asn Ile Leu Ser Asn Tyr Leu Arg
 245 250 255
 Lys Gln Phe Arg Lys Lys Asn His Lys Ile Asp Asn Tyr Ile Val Asp
 260 265 270
 Gln Leu Leu Phe Asp Arg Asp Thr Phe Tyr Ile Leu Glu Leu Cys Asn
 275 280 285
 Ser Leu Arg Asn Asn Ile Leu Ile Ser Thr Ile Leu Lys Arg Tyr Thr
 290 295 300
 Asp Ser Ile Gln Asp Leu Leu Leu Glu Tyr Val Ser Tyr His Thr Val
 305 310 315 320
 Tyr Ile Asn Val Ile Lys Cys Met Ile Asp Glu Gly Ala Thr Leu Tyr
 325 330 335
 Arg Phe Lys His Ile Asn Lys Tyr Phe Gln Lys Phe Gly Asn Arg Asp
 340 345 350
 Pro Lys Val Val Glu Tyr Ile Leu Lys Asn Gly Asn Leu Val Val Asn

gac aat gac aca act tct ttc gtt aag ata tac ttt aaa aaa ttt tgg	192
Asp Asn Asp Thr Thr Ser Phe Val Lys Ile Tyr Phe Lys Lys Phe Trp	
50 55 60	
att act gtt atg act aaa tgg tgt gct ccg ttt att gat acc gtt agc	240
Ile Thr Val Met Thr Lys Trp Cys Ala Pro Phe Ile Asp Thr Val Ser	
65 70 75 80	
gta tac aca tcg cat gat aat ctg aat ata caa ttt tat agt agg gac	288
Val Tyr Thr Ser His Asp Asn Leu Asn Ile Gln Phe Tyr Ser Arg Asp	
85 90 95	
gaa tat gat aca caa agc gag gat aaa att tgt acc att gat gtt aaa	336
Glu Tyr Asp Thr Gln Ser Glu Asp Lys Ile Cys Thr Ile Asp Val Lys	
100 105 110	
gca cga tgc aaa cat cta aca aaa cga gaa gtt aca gta caa caa gaa	384
Ala Arg Cys Lys His Leu Thr Lys Arg Glu Val Thr Val Gln Gln Glu	
115 120 125	
gcc tac aga tat tca tta tct tct gac cta tcg tgt ttt gat tct ata	432
Ala Tyr Arg Tyr Ser Leu Ser Ser Asp Leu Ser Cys Phe Asp Ser Ile	
130 135 140	
gat cta gag att gat ctt att gaa act aat agt act gac act aca gta	480
Asp Leu Glu Ile Asp Leu Ile Glu Thr Asn Ser Thr Asp Thr Thr Val	
145 150 155 160	
ctg aaa tca tat gag ctc atg ctt ccc aaa cgt gct aaa tcc ata cat	528
Leu Lys Ser Tyr Glu Leu Met Leu Pro Lys Arg Ala Lys Ser Ile His	
165 170 175	
aac tga	534
Asn *	

<210> 54
 <211> 177
 <212> PRT
 <213> vaccinia virus

<400> 54

Met Ser Ala Ile Arg Phe Ile Ala Cys Leu Tyr Leu Ile Ser Ile Phe	
1 5 10 15	
Gly Asn Cys His Glu Asp Pro Tyr Tyr Gln Pro Phe Asp Lys Leu Asn	
20 25 30	
Ile Thr Leu Asp Ile Tyr Thr Tyr Glu Asp Leu Val Pro Tyr Thr Val	
35 40 45	
Asp Asn Asp Thr Thr Ser Phe Val Lys Ile Tyr Phe Lys Lys Phe Trp	
50 55 60	
Ile Thr Val Met Thr Lys Trp Cys Ala Pro Phe Ile Asp Thr Val Ser	
65 70 75 80	
Val Tyr Thr Ser His Asp Asn Leu Asn Ile Gln Phe Tyr Ser Arg Asp	
85 90 95	
Glu Tyr Asp Thr Gln Ser Glu Asp Lys Ile Cys Thr Ile Asp Val Lys	
100 105 110	
Ala Arg Cys Lys His Leu Thr Lys Arg Glu Val Thr Val Gln Gln Glu	
115 120 125	

Ala	Tyr	Arg	Tyr	Ser	Leu	Ser	Ser	Asp	Leu	Ser	Cys	Phe	Asp	Ser	Ile
130						135					140				
Asp	Leu	Glu	Ile	Asp	Leu	Ile	Glu	Thr	Asn	Ser	Thr	Asp	Thr	Thr	Val
145					150					155					160
Leu	Lys	Ser	Tyr	Glu	Leu	Met	Leu	Pro	Lys	Arg	Ala	Lys	Ser	Ile	His
				165					170					175	

Asn

<210> 55
 <211> 453
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(453)

<400> 55																
atg	ggt	ata	cag	cac	gaa	ttc	gac	atc	att	att	aat	gga	gat	atc	gcg	48
Met	Gly	Ile	Gln	His	Glu	Phe	Asp	Ile	Ile	Ile	Asn	Gly	Asp	Ile	Ala	
1				5					10					15		
ttg	aga	aat	tta	cag	tta	cat	aaa	ggg	gat	aac	tac	gga	tgc	aaa	cta	96
Leu	Arg	Asn	Leu	Gln	Leu	His	Lys	Gly	Asp	Asn	Tyr	Gly	Cys	Lys	Leu	
			20					25					30			
aaa	att	att	tcg	aat	gat	tac	aag	aaa	tta	aag	ttt	aga	ttc	att	ata	144
Lys	Ile	Ile	Ser	Asn	Asp	Tyr	Lys	Lys	Leu	Lys	Phe	Arg	Phe	Ile	Ile	
			35				40					45				
cgc	cca	gat	tgg	tcg	gaa	atc	gac	gag	gtc	aaa	gga	tta	acc	gta	ttt	192
Arg	Pro	Asp	Trp	Ser	Glu	Ile	Asp	Glu	Val	Lys	Gly	Leu	Thr	Val	Phe	
	50					55					60					
gca	aac	aac	tat	gcg	gtg	aaa	ggt	aat	aag	gta	gat	gac	acg	ttc	tat	240
Ala	Asn	Asn	Tyr	Ala	Val	Lys	Val	Asn	Lys	Val	Asp	Asp	Thr	Phe	Tyr	
65					70					75					80	
tac	gta	ata	tat	gag	gct	gta	ata	cat	ctg	tat	aac	aaa	aaa	aca	gag	288
Tyr	Val	Ile	Tyr	Glu	Ala	Val	Ile	His	Leu	Tyr	Asn	Lys	Lys	Thr	Glu	
				85					90					95		
ata	ttg	att	tat	tct	gat	gat	gag	aac	gag	ctc	ttc	aaa	cac	tat	tac	336
Ile	Leu	Ile	Tyr	Ser	Asp	Asp	Glu	Asn	Glu	Leu	Phe	Lys	His	Tyr	Tyr	
			100					105					110			
cca	tac	atc	agt	cta	aat	atg	att	agt	aaa	aag	tat	aaa	gtt	aaa	gaa	384
Pro	Tyr	Ile	Ser	Leu	Asn	Met	Ile	Ser	Lys	Lys	Tyr	Lys	Val	Lys	Glu	
		115					120					125				
gag	aac	tac	tca	tcc	ccg	tat	ata	gaa	cat	ccg	tta	atc	ccg	tat	aga	432
Glu	Asn	Tyr	Ser	Ser	Pro	Tyr	Ile	Glu	His	Pro	Leu	Ile	Pro	Tyr	Arg	
	130					135					140					
gat	tat	gag	tcc	atg	gat	taa										453
Asp	Tyr	Glu	Ser	Met	Asp	*										
145					150											

<210> 56
 <211> 150
 <212> PRT
 <213> vaccinia virus

<400> 56
 Met Gly Ile Gln His Glu Phe Asp Ile Ile Ile Asn Gly Asp Ile Ala
 1 5 10 15
 Leu Arg Asn Leu Gln Leu His Lys Gly Asp Asn Tyr Gly Cys Lys Leu
 20 25 30
 Lys Ile Ile Ser Asn Asp Tyr Lys Lys Leu Lys Phe Arg Phe Ile Ile
 35 40 45
 Arg Pro Asp Trp Ser Glu Ile Asp Glu Val Lys Gly Leu Thr Val Phe
 50 55 60
 Ala Asn Asn Tyr Ala Val Lys Val Asn Lys Val Asp Asp Thr Phe Tyr
 65 70 75 80
 Tyr Val Ile Tyr Glu Ala Val Ile His Leu Tyr Asn Lys Lys Thr Glu
 85 90 95
 Ile Leu Ile Tyr Ser Asp Asp Glu Asn Glu Leu Phe Lys His Tyr Tyr
 100 105 110
 Pro Tyr Ile Ser Leu Asn Met Ile Ser Lys Lys Tyr Lys Val Lys Glu
 115 120 125
 Glu Asn Tyr Ser Ser Pro Tyr Ile Glu His Pro Leu Ile Pro Tyr Arg
 130 135 140
 Asp Tyr Glu Ser Met Asp
 145 150

<210> 57
 <211> 456
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(456)

<400> 57
 atg aat gcg tat aat aaa gcc gat tcg ttt tct tta gag tct gat tct 48
 Met Asn Ala Tyr Asn Lys Ala Asp Ser Phe Ser Leu Glu Ser Asp Ser
 1 5 10 15
 atc aaa gat gtt ata cac gat tat att tgt tgg ctc agt atg act gat 96
 Ile Lys Asp Val Ile His Asp Tyr Ile Cys Trp Leu Ser Met Thr Asp
 20 25 30
 gaa atg aga cca tct atc gga aac gtc ttt aaa gcg atg gaa acg ttt 144
 Glu Met Arg Pro Ser Ile Gly Asn Val Phe Lys Ala Met Glu Thr Phe
 35 40 45
 aag ata gac gcg gtt aga tat tac gat ggt aac ata tac gat tta gct 192
 Lys Ile Asp Ala Val Arg Tyr Tyr Asp Gly Asn Ile Tyr Asp Leu Ala
 50 55 60
 aaa gat ata aat gcg atg tca ttc gac agt ttt ata aga tct cta caa 240
 Lys Asp Ile Asn Ala Met Ser Phe Asp Ser Phe Ile Arg Ser Leu Gln
 65 70 75 80


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aat atc tct tca aag aaa gat aaa ctc act gtt tat gga acc atg gga 288
Asn Ile Ser Ser Lys Lys Asp Lys Leu Thr Val Tyr Gly Thr Met Gly
      85                      90                      95

ctg ctg tct att gtc gta gat att aac aaa ggt tgt gat ata tcc aat 336
Leu Leu Ser Ile Val Val Asp Ile Asn Lys Gly Cys Asp Ile Ser Asn
      100                      105                      110

atc aag ttc gct gcc gga ata atc att tta atg gag tat att ttt gat 384
Ile Lys Phe Ala Ala Gly Ile Ile Ile Leu Met Glu Tyr Ile Phe Asp
      115                      120                      125

gac aca gat ctg tcg cat ctt aaa gta gca ctc tat cgt aga ata cag 432
Asp Thr Asp Leu Ser His Leu Lys Val Ala Leu Tyr Arg Arg Ile Gln
      130                      135                      140

aga cgt gat gat gta gat aga taa 456
Arg Arg Asp Asp Val Asp Arg *
145                      150

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```

<210> 58
<211> 151
<212> PRT
<213> vaccinia virus

```

```

<400> 58
Met Asn Ala Tyr Asn Lys Ala Asp Ser Phe Ser Leu Glu Ser Asp Ser
 1          5          10          15
Ile Lys Asp Val Ile His Asp Tyr Ile Cys Trp Leu Ser Met Thr Asp
      20          25          30
Glu Met Arg Pro Ser Ile Gly Asn Val Phe Lys Ala Met Glu Thr Phe
      35          40          45
Lys Ile Asp Ala Val Arg Tyr Tyr Asp Gly Asn Ile Tyr Asp Leu Ala
      50          55          60
Lys Asp Ile Asn Ala Met Ser Phe Asp Ser Phe Ile Arg Ser Leu Gln
      65          70          75          80
Asn Ile Ser Ser Lys Lys Asp Lys Leu Thr Val Tyr Gly Thr Met Gly
      85          90          95
Leu Leu Ser Ile Val Val Asp Ile Asn Lys Gly Cys Asp Ile Ser Asn
      100          105          110
Ile Lys Phe Ala Ala Gly Ile Ile Ile Leu Met Glu Tyr Ile Phe Asp
      115          120          125
Asp Thr Asp Leu Ser His Leu Lys Val Ala Leu Tyr Arg Arg Ile Gln
      130          135          140
Arg Arg Asp Asp Val Asp Arg
145          150

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<210> 59
<211> 612
<212> DNA
<213> vaccinia virus

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<220>
<221> CDS
<222> (1)...(612)

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<400> 59
atg gcg tat atg aac aga tca gat ctc gat aaa cta aaa cac gaa aat 48
Met Ala Tyr Met Asn Arg Ser Asp Leu Asp Lys Leu Lys His Glu Asn
1 5 10 15
atc ttt tct ggg aat att ata gag gac gcc aaa gag ttc gtc ttt gga 96
Ile Phe Ser Gly Asn Ile Ile Glu Asp Ala Lys Glu Phe Val Phe Gly
20 25 30
tct aga aaa ata tat act gat tct gtt gat gat cta ata gaa tta tat 144
Ser Arg Lys Ile Tyr Thr Asp Ser Val Asp Asp Leu Ile Glu Leu Tyr
35 40 45
agt tta gcc aaa tat ctt aac aac gaa aat ctt aaa gat gta gtg att 192
Ser Leu Ala Lys Tyr Leu Asn Asn Glu Asn Leu Lys Asp Val Val Ile
50 55 60
gag aga atg gat tat gtg tgc aaa tat atc ggt aaa gat aat tgg agt 240
Glu Arg Met Asp Tyr Val Cys Lys Tyr Ile Gly Lys Asp Asn Trp Ser
65 70 75 80
act ata tat tcg ttt tat aaa gaa aat ggt cta cgt aat agt ttt cta 288
Thr Ile Tyr Ser Phe Tyr Lys Glu Asn Gly Leu Arg Asn Ser Phe Leu
85 90 95
cga caa tac atc aac aat aat ata gaa gag ata tgt aac aca gac caa 336
Arg Gln Tyr Ile Asn Asn Asn Ile Glu Glu Ile Cys Asn Thr Asp Gln
100 105 110
ttt cta aaa ttg gat gta gat tca gta tgt gat att cta gac aac gat 384
Phe Leu Lys Leu Asp Val Asp Ser Val Cys Asp Ile Leu Asp Asn Asp
115 120 125
gag atc gta gta act aga gaa tat act atc tta aac atg gta tta cga 432
Glu Ile Val Val Thr Arg Glu Tyr Thr Ile Leu Asn Met Val Leu Arg
130 135 140
tgg cta gaa aat aaa aga gtt aat ata gac gac ttt act aaa gtt atg 480
Trp Leu Glu Asn Lys Arg Val Asn Ile Asp Asp Phe Thr Lys Val Met
145 150 155 160
ttc gtt att cga ttt aaa ttt ata aca tat tct gaa ctc act aat gcg 528
Phe Val Ile Arg Phe Lys Phe Ile Thr Tyr Ser Glu Leu Thr Asn Ala
165 170 175
ata gag aaa ata gct cca gaa tac aga caa tgc tta cag gat cta tac 576
Ile Glu Lys Ile Ala Pro Glu Tyr Arg Gln Cys Leu Gln Asp Leu Tyr
180 185 190
cat atg aaa att acg cgt cct aga cac ttt gat aac 612
His Met Lys Ile Thr Arg Pro Arg His Phe Asp Asn
195 200

<210> 60
<211> 204
<212> PRT
<213> vaccinia virus

<400> 60
Met Ala Tyr Met Asn Arg Ser Asp Leu Asp Lys Leu Lys His Glu Asn
1 5 10 15
Ile Phe Ser Gly Asn Ile Ile Glu Asp Ala Lys Glu Phe Val Phe Gly
20 25 30
Ser Arg Lys Ile Tyr Thr Asp Ser Val Asp Asp Leu Ile Glu Leu Tyr
35 40 45
Ser Leu Ala Lys Tyr Leu Asn Asn Glu Asn Leu Lys Asp Val Val Ile
50 55 60
Glu Arg Met Asp Tyr Val Cys Lys Tyr Ile Gly Lys Asp Asn Trp Ser
65 70 75 80
Thr Ile Tyr Ser Phe Tyr Lys Glu Asn Gly Leu Arg Asn Ser Phe Leu
85 90 95
Arg Gln Tyr Ile Asn Asn Asn Ile Glu Glu Ile Cys Asn Thr Asp Gln
100 105 110
Phe Leu Lys Leu Asp Val Asp Ser Val Cys Asp Ile Leu Asp Asn Asp
115 120 125
Glu Ile Val Val Thr Arg Glu Tyr Thr Ile Leu Asn Met Val Leu Arg
130 135 140
Trp Leu Glu Asn Lys Arg Val Asn Ile Asp Asp Phe Thr Lys Val Met
145 150 155 160
Phe Val Ile Arg Phe Lys Phe Ile Thr Tyr Ser Glu Leu Thr Asn Ala
165 170 175
Ile Glu Lys Ile Ala Pro Glu Tyr Arg Gln Cys Leu Gln Asp Leu Tyr
180 185 190
His Met Lys Ile Thr Arg Pro Arg His Phe Asp Asn
195 200

<210> 61
<211> 189
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(189)

<400> 61
atg gaa agt ggt aat aat aca tgg att cct aaa aca gat gat gag tat 48
Met Glu Ser Gly Asn Asn Thr Trp Ile Pro Lys Thr Asp Asp Glu Tyr
1 5 10 15
aag ttt cta tct aaa ttg atg aat att gcg aag ttt aac aac acc aaa 96
Lys Phe Leu Ser Lys Leu Met Asn Ile Ala Lys Phe Asn Asn Thr Lys
20 25 30
ttt gat tac tac gtg ctt gtt gga gat acg gat ccg tgt act gtc ttt 144
Phe Asp Tyr Tyr Val Leu Val Gly Asp Thr Asp Pro Cys Thr Val Phe
35 40 45
acg ttc aaa gta aca aag tat tac atc aat ctc aat tat gaa tag 189
Thr Phe Lys Val Thr Lys Tyr Tyr Ile Asn Leu Asn Tyr Glu *
50 55 60

<210> 62
<211> 62

<212> PRT
 <213> vaccinia virus

<400> 62
 Met Glu Ser Gly Asn Asn Thr Trp Ile Pro Lys Thr Asp Asp Glu Tyr
 1 5 10 15
 Lys Phe Leu Ser Lys Leu Met Asn Ile Ala Lys Phe Asn Asn Thr Lys
 20 25 30
 Phe Asp Tyr Tyr Val Leu Val Gly Asp Thr Asp Pro Cys Thr Val Phe
 35 40 45
 Thr Phe Lys Val Thr Lys Tyr Tyr Ile Asn Leu Asn Tyr Glu
 50 55 60

<210> 63
 <211> 408
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(408)

<400> 63
 atg ttt tct aaa tct ctt aac ttt aga ttc gag aat gta aag cgc gac 48
 Met Phe Ser Lys Ser Leu Asn Phe Arg Phe Glu Asn Val Lys Arg Asp
 1 5 10 15
 tat aaa ttg gtt atg tgt tct ata tct ttg aca tac aag cca tct ata 96
 Tyr Lys Leu Val Met Cys Ser Ile Ser Leu Thr Tyr Lys Pro Ser Ile
 20 25 30
 tgc aga atc caa tac gat aac aat aaa tat tta gat att agc gac agt 144
 Cys Arg Ile Gln Tyr Asp Asn Asn Lys Tyr Leu Asp Ile Ser Asp Ser
 35 40 45
 caa gaa tgt aat aat ata tgt tac tgc gtc ata act atg gat ccc cac 192
 Gln Glu Cys Asn Asn Ile Cys Tyr Cys Val Ile Thr Met Asp Pro His
 50 55 60
 cac ttg ata gat tta gaa acc ata tgt gtc ttg gtc gat aaa tca gga 240
 His Leu Ile Asp Leu Glu Thr Ile Cys Val Leu Val Asp Lys Ser Gly
 65 70 75 80
 aag tgt ttg cta gta aac gag ttt tat att aga ttt agg aaa aat cac 288
 Lys Cys Leu Leu Val Asn Glu Phe Tyr Ile Arg Phe Arg Lys Asn His
 85 90 95
 atc tac aat agc ttt acc gat cta tgc atg gat tat ata ttt gaa cta 336
 Ile Tyr Asn Ser Phe Thr Asp Leu Cys Met Asp Tyr Ile Phe Glu Leu
 100 105 110
 ccg aat aca aaa gaa tta ttc act ctg cgc aac gat gat gga cga aac 384
 Pro Asn Thr Lys Glu Leu Phe Thr Leu Arg Asn Asp Asp Gly Arg Asn
 115 120 125
 ata gcc tgg gat aat gga aag tgg 408
 Ile Ala Trp Asp Asn Gly Lys Trp
 130 135

<210> 64
 <211> 136
 <212> PRT
 <213> vaccinia virus

<400> 64
 Met Phe Ser Lys Ser Leu Asn Phe Arg Phe Glu Asn Val Lys Arg Asp
 1 5 10 15
 Tyr Lys Leu Val Met Cys Ser Ile Ser Leu Thr Tyr Lys Pro Ser Ile
 20 25 30
 Cys Arg Ile Gln Tyr Asp Asn Asn Lys Tyr Leu Asp Ile Ser Asp Ser
 35 40 45
 Gln Glu Cys Asn Asn Ile Cys Tyr Cys Val Ile Thr Met Asp Pro His
 50 55 60
 His Leu Ile Asp Leu Glu Thr Ile Cys Val Leu Val Asp Lys Ser Gly
 65 70 75 80
 Lys Cys Leu Leu Val Asn Glu Phe Tyr Ile Arg Phe Arg Lys Asn His
 85 90 95
 Ile Tyr Asn Ser Phe Thr Asp Leu Cys Met Asp Tyr Ile Phe Glu Leu
 100 105 110
 Pro Asn Thr Lys Glu Leu Phe Thr Leu Arg Asn Asp Asp Gly Arg Asn
 115 120 125
 Ile Ala Trp Asp Asn Gly Lys Trp
 130 135

<210> 65
 <211> 177
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(177)

<400> 65
 atg gat act att aaa ata ttt aat cat gga gag ttt gat act att aga 48
 Met Asp Thr Ile Lys Ile Phe Asn His Gly Glu Phe Asp Thr Ile Arg
 1 5 10 15
 aat gaa ttg gtc aac ttg tta aaa gtt gta aaa tgg aac acc att aat 96
 Asn Glu Leu Val Asn Leu Leu Lys Val Val Lys Trp Asn Thr Ile Asn
 20 25 30
 tca aat gta acg gta tcg tct acc gac aca ata aat ata tca gag aga 144
 Ser Asn Val Thr Val Ser Ser Thr Asp Thr Ile Asn Ile Ser Glu Arg
 35 40 45
 tat tat aca aac agt tta aaa atg tac gaa ata 177
 Tyr Tyr Thr Asn Ser Leu Lys Met Tyr Glu Ile
 50 55

<210> 66
 <211> 59
 <212> PRT
 <213> vaccinia virus

<400> 66
 Met Asp Thr Ile Lys Ile Phe Asn His Gly Glu Phe Asp Thr Ile Arg
 1 5 10 15
 Asn Glu Leu Val Asn Leu Leu Lys Val Val Lys Trp Asn Thr Ile Asn
 20 25 30
 Ser Asn Val Thr Val Ser Ser Thr Asp Thr Ile Asn Ile Ser Glu Arg
 35 40 45
 Tyr Tyr Thr Asn Ser Leu Lys Met Tyr Glu Ile
 50 55

<210> 67
 <211> 792
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(792)

<400> 67
 atg aag gtg gag agc gtg acg ttc ctg aca ttg ttg gga ata gga tgc 48
 Met Lys Val Glu Ser Val Thr Phe Leu Thr Leu Leu Gly Ile Gly Cys
 1 5 10 15

 gtt cta tca tgc tgt act att ccg tca cga ccc att aat atg aaa ttt 96
 Val Leu Ser Cys Cys Thr Ile Pro Ser Arg Pro Ile Asn Met Lys Phe
 20 25 30

 aag aat agt gtg gag act gat gct aat gct aat tac aac ata gga gac 144
 Lys Asn Ser Val Glu Thr Asp Ala Asn Ala Asn Tyr Asn Ile Gly Asp
 35 40 45

 act ata gaa tat cta tgt cta cct gga tac aga aag caa aaa atg gga 192
 Thr Ile Glu Tyr Leu Cys Leu Pro Gly Tyr Arg Lys Gln Lys Met Gly
 50 55 60

 cct ata tat gct aaa tgt aca ggt act gga tgg aca ctc ttt aat caa 240
 Pro Ile Tyr Ala Lys Cys Thr Gly Thr Gly Trp Thr Leu Phe Asn Gln
 65 70 75 80

 tgt att aaa cgg aga tgc cca tcg cct cga gat atc gat aat ggc caa 288
 Cys Ile Lys Arg Arg Cys Pro Ser Pro Arg Asp Ile Asp Asn Gly Gln
 85 90 95

 ctt gat att ggt gga gta gac ttt ggc tct agt ata acg tac tct tgt 336
 Leu Asp Ile Gly Gly Val Asp Phe Gly Ser Ser Ile Thr Tyr Ser Cys
 100 105 110

 aat agc gga tat cat ttg atc ggt gaa tct aaa tcg tat tgt gaa tta 384
 Asn Ser Gly Tyr His Leu Ile Gly Glu Ser Lys Ser Tyr Cys Glu Leu
 115 120 125

 gga tct act gga tct atg gta tgg aat ccc gag gca cct att tgt gaa 432
 Gly Ser Thr Gly Ser Met Val Trp Asn Pro Glu Ala Pro Ile Cys Glu
 130 135 140

 tct gtt aaa tgc caa tcc cct cca tct ata tcc aac gga aga cat aac 480
 Ser Val Lys Cys Gln Ser Pro Pro Ser Ile Ser Asn Gly Arg His Asn

145	150	155	160	
gga tac gag gat ttt tat acc gat ggg agc gtt gta act tat agt tgc	528			
Gly Tyr Glu Asp Phe Tyr Thr Asp Gly Ser Val Val Thr Tyr Ser Cys				
165	170	175		
aat agt gga tat tcg ttg att ggt aac tct ggt gtc ctg tgt tca gga	576			
Asn Ser Gly Tyr Ser Leu Ile Gly Asn Ser Gly Val Leu Cys Ser Gly				
180	185	190		
gga gaa tgg tcc gat cca ccc acg tgt cag att gtt aaa tgt cca cat	624			
Gly Glu Trp Ser Asp Pro Pro Thr Cys Gln Ile Val Lys Cys Pro His				
195	200	205		
cct aca ata tca aac gga tac ttg tct agc ggg ttt aaa aga tca tac	672			
Pro Thr Ile Ser Asn Gly Tyr Leu Ser Ser Gly Phe Lys Arg Ser Tyr				
210	215	220		
tca tac aac gac aat gta gac ttt aag tgc aag tac gga tat aaa cta	720			
Ser Tyr Asn Asp Asn Val Asp Phe Lys Cys Lys Tyr Gly Tyr Lys Leu				
225	230	235	240	
tct ggt tcc tca tca tct act tgc tct cca gga aat aca tgg cag ccg	768			
Ser Gly Ser Ser Ser Ser Thr Cys Ser Pro Gly Asn Thr Trp Gln Pro				
245	250	255		
gaa ctt cca aaa tgt gta cgc taa	792			
Glu Leu Pro Lys Cys Val Arg *				
260				

<210> 68

<211> 263

<212> PRT

<213> vaccinia virus

<400> 68

Met Lys Val Glu Ser Val Thr Phe Leu Thr Leu Leu Gly Ile Gly Cys	
1 5 10 15	
Val Leu Ser Cys Cys Thr Ile Pro Ser Arg Pro Ile Asn Met Lys Phe	
20 25 30	
Lys Asn Ser Val Glu Thr Asp Ala Asn Ala Asn Tyr Asn Ile Gly Asp	
35 40 45	
Thr Ile Glu Tyr Leu Cys Leu Pro Gly Tyr Arg Lys Gln Lys Met Gly	
50 55 60	
Pro Ile Tyr Ala Lys Cys Thr Gly Thr Gly Trp Thr Leu Phe Asn Gln	
65 70 75 80	
Cys Ile Lys Arg Arg Cys Pro Ser Pro Arg Asp Ile Asp Asn Gly Gln	
85 90 95	
Leu Asp Ile Gly Gly Val Asp Phe Gly Ser Ser Ile Thr Tyr Ser Cys	
100 105 110	
Asn Ser Gly Tyr His Leu Ile Gly Glu Ser Lys Ser Tyr Cys Glu Leu	
115 120 125	
Gly Ser Thr Gly Ser Met Val Trp Asn Pro Glu Ala Pro Ile Cys Glu	
130 135 140	
Ser Val Lys Cys Gln Ser Pro Pro Ser Ile Ser Asn Gly Arg His Asn	
145 150 155 160	
Gly Tyr Glu Asp Phe Tyr Thr Asp Gly Ser Val Val Thr Tyr Ser Cys	
165 170 175	

Asn Ser Gly Tyr Ser Leu Ile Gly Asn Ser Gly Val Leu Cys Ser Gly
 180 185 190
 Gly Glu Trp Ser Asp Pro Pro Thr Cys Gln Ile Val Lys Cys Pro His
 195 200 205
 Pro Thr Ile Ser Asn Gly Tyr Leu Ser Ser Gly Phe Lys Arg Ser Tyr
 210 215 220
 Ser Tyr Asn Asp Asn Val Asp Phe Lys Cys Lys Tyr Gly Tyr Lys Leu
 225 230 235 240
 Ser Gly Ser Ser Ser Ser Thr Cys Ser Pro Gly Asn Thr Trp Gln Pro
 245 250 255
 Glu Leu Pro Lys Cys Val Arg
 260

<210> 69
 <211> 1521
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1521)

<400> 69
 atg gaa agc gtg ata ttt tct atc aat ggg gaa att ata caa gtg aat 48
 Met Glu Ser Val Ile Phe Ser Ile Asn Gly Glu Ile Ile Gln Val Asn
 1 5 10 15
 aag gaa att att acg gcg tct ccg tat aat ttt ttt aaa cgc att cag 96
 Lys Glu Ile Ile Thr Ala Ser Pro Tyr Asn Phe Phe Lys Arg Ile Gln
 20 25 30
 gag cac cat ata aat gat gaa gtg att ata ttg aat ggt ata aac tat 144
 Glu His His Ile Asn Asp Glu Val Ile Ile Leu Asn Gly Ile Asn Tyr
 35 40 45
 cac gcg ttt gaa tcg cta tta gac tat atg cgc tgg aag aag ata aac 192
 His Ala Phe Glu Ser Leu Leu Asp Tyr Met Arg Trp Lys Lys Ile Asn
 50 55 60
 atc acc ata aac aat gta gaa atg ata cta gtt gct gcc gta ata att 240
 Ile Thr Ile Asn Asn Val Glu Met Ile Leu Val Ala Ala Val Ile Ile
 65 70 75 80
 gat gtt acg cct gta gta gat cta tgt gta aaa act atg att cat aat 288
 Asp Val Thr Pro Val Val Asp Leu Cys Val Lys Thr Met Ile His Asn
 85 90 95
 att aat tcc aca aat tgt ata agg atg ttt aac ttt tct aaa aga tat 336
 Ile Asn Ser Thr Asn Cys Ile Arg Met Phe Asn Phe Ser Lys Arg Tyr
 100 105 110
 gga att aaa aaa cta tat aat gcg tcg atg tca gaa ata atc aac aat 384
 Gly Ile Lys Lys Leu Tyr Asn Ala Ser Met Ser Glu Ile Ile Asn Asn
 115 120 125
 att act gcg gtg aca tcc gat cca gaa ttt gga aaa tta tca aag gat 432
 Ile Thr Ala Val Thr Ser Asp Pro Glu Phe Gly Lys Leu Ser Lys Asp
 130 135 140

gaa ctg aca act atc tta tcc cac gaa gac gtt aac gta aat cat gag	480
Glu Leu Thr Thr Ile Leu Ser His Glu Asp Val Asn Val Asn His Glu	
145 150 155 160	
gat gtt aca gct atg ata tta tta aag tgg ata cat aaa aat cca aac	528
Asp Val Thr Ala Met Ile Leu Leu Lys Trp Ile His Lys Asn Pro Asn	
165 170 175	
gat gta gat atc atc aac att tta cat ccc aag ttt atg act aat act	576
Asp Val Asp Ile Ile Asn Ile Leu His Pro Lys Phe Met Thr Asn Thr	
180 185 190	
atg cgc aat gct ata tca ttg ttg gga tta act ata tcc aaa tct aca	624
Met Arg Asn Ala Ile Ser Leu Leu Gly Leu Thr Ile Ser Lys Ser Thr	
195 200 205	
aag cca gtg aca cga aat ggt ata aaa cat aat ata gta gtc att aaa	672
Lys Pro Val Thr Arg Asn Gly Ile Lys His Asn Ile Val Val Ile Lys	
210 215 220	
aac tct gat tat ata tcc aca ata acc cat tac tct cct aga aca gaa	720
Asn Ser Asp Tyr Ile Ser Thr Ile Thr His Tyr Ser Pro Arg Thr Glu	
225 230 235 240	
tat tgg acg ata gtc ggt aat aca gat aga caa ttc tat aat gca aat	768
Tyr Trp Thr Ile Val Gly Asn Thr Asp Arg Gln Phe Tyr Asn Ala Asn	
245 250 255	
gtt tta cat aat tgt cta tac att att ggc ggc atg att aac aat aga	816
Val Leu His Asn Cys Leu Tyr Ile Ile Gly Gly Met Ile Asn Asn Arg	
260 265 270	
cat gtt tat tcc gta tcg cgg gta gat ctt aaa acg aaa aaa tgg aaa	864
His Val Tyr Ser Val Ser Arg Val Asp Leu Lys Thr Lys Lys Trp Lys	
275 280 285	
acg gtt act aat atg tcg tcg tta aaa tca gaa gtt agt act tgt gtt	912
Thr Val Thr Asn Met Ser Ser Leu Lys Ser Glu Val Ser Thr Cys Val	
290 295 300	
aac gat gga aag tta tat gta ata gga gga tta gaa ttt tct att tca	960
Asn Asp Gly Lys Leu Tyr Val Ile Gly Gly Leu Glu Phe Ser Ile Ser	
305 310 315 320	
acg ggt gtg gca gaa tat ttg aaa cac ggc act tcg aaa tgg ata aga	1008
Thr Gly Val Ala Glu Tyr Leu Lys His Gly Thr Ser Lys Trp Ile Arg	
325 330 335	
ctt cca aac tta att act cct aga tat tca ggc gcg tcg gta ttc gta	1056
Leu Pro Asn Leu Ile Thr Pro Arg Tyr Ser Gly Ala Ser Val Phe Val	
340 345 350	
aac gat gat ata tat gta atg ggt gga gtt tat acc acg tat gaa aaa	1104
Asn Asp Asp Ile Tyr Val Met Gly Gly Val Tyr Thr Thr Tyr Glu Lys	
355 360 365	
tat gta gta tta aac gat gtg gaa tgt ttc act aaa aat cgt tgg ata	1152
Tyr Val Val Leu Asn Asp Val Glu Cys Phe Thr Lys Asn Arg Trp Ile	

370	375	380	
aaa aag tct ccc atg cct aga cat cat agt ata gtt tat gct gta gag			1200
Lys Lys Ser Pro Met Pro Arg His His Ser Ile Val Tyr Ala Val Glu			
385	390	395	400
tac gac ggc gac atc tat gta att act gga att act cac gag act cgt			1248
Tyr Asp Gly Asp Ile Tyr Val Ile Thr Gly Ile Thr His Glu Thr Arg			
	405	410	415
aat tat cta tac aaa tat ata gtt aag gaa gac aaa tgg ata gaa ttg			1296
Asn Tyr Leu Tyr Lys Tyr Ile Val Lys Glu Asp Lys Trp Ile Glu Leu			
	420	425	430
tac atg tac ttt aac cat gta gga aag atg ttc gtg tgt tct tgc ggt			1344
Tyr Met Tyr Phe Asn His Val Gly Lys Met Phe Val Cys Ser Cys Gly			
	435	440	445
gat tat atc tta att ata gca gat gca aaa tac gaa tat tat cca aaa			1392
Asp Tyr Ile Leu Ile Ile Ala Asp Ala Lys Tyr Glu Tyr Tyr Pro Lys			
	450	455	460
tca aat act tgg aat ttg ttc gat atg tca act cgt aat atc gaa tat			1440
Ser Asn Thr Trp Asn Leu Phe Asp Met Ser Thr Arg Asn Ile Glu Tyr			
	465	470	480
tat gat atg ttt act aaa gat gaa act cat aag tca ctg cca tcg ttt			1488
Tyr Asp Met Phe Thr Lys Asp Glu Thr His Lys Ser Leu Pro Ser Phe			
	485	490	495
ttg agc aac tgt gaa aaa caa ttt cta caa tag			1521
Leu Ser Asn Cys Glu Lys Gln Phe Leu Gln *			
	500	505	

<210> 70
 <211> 506
 <212> PRT
 <213> vaccinia virus

<400> 70

Met Glu Ser Val Ile Phe Ser Ile Asn Gly Glu Ile Ile Gln Val Asn	
1 5 10 15	
Lys Glu Ile Ile Thr Ala Ser Pro Tyr Asn Phe Phe Lys Arg Ile Gln	
20 25 30	
Glu His His Ile Asn Asp Glu Val Ile Ile Leu Asn Gly Ile Asn Tyr	
35 40 45	
His Ala Phe Glu Ser Leu Leu Asp Tyr Met Arg Trp Lys Lys Ile Asn	
50 55 60	
Ile Thr Ile Asn Asn Val Glu Met Ile Leu Val Ala Ala Val Ile Ile	
65 70 75 80	
Asp Val Thr Pro Val Val Asp Leu Cys Val Lys Thr Met Ile His Asn	
85 90 95	
Ile Asn Ser Thr Asn Cys Ile Arg Met Phe Asn Phe Ser Lys Arg Tyr	
100 105 110	
Gly Ile Lys Lys Leu Tyr Asn Ala Ser Met Ser Glu Ile Ile Asn Asn	
115 120 125	
Ile Thr Ala Val Thr Ser Asp Pro Glu Phe Gly Lys Leu Ser Lys Asp	
130 135 140	

Glu	Leu	Thr	Thr	Ile	Leu	Ser	His	Glu	Asp	Val	Asn	Val	Asn	His	Glu
145					150					155					160
Asp	Val	Thr	Ala	Met	Ile	Leu	Leu	Lys	Trp	Ile	His	Lys	Asn	Pro	Asn
				165					170						175
Asp	Val	Asp	Ile	Ile	Asn	Ile	Leu	His	Pro	Lys	Phe	Met	Thr	Asn	Thr
			180					185					190		
Met	Arg	Asn	Ala	Ile	Ser	Leu	Leu	Gly	Leu	Thr	Ile	Ser	Lys	Ser	Thr
		195					200					205			
Lys	Pro	Val	Thr	Arg	Asn	Gly	Ile	Lys	His	Asn	Ile	Val	Val	Ile	Lys
	210					215					220				
Asn	Ser	Asp	Tyr	Ile	Ser	Thr	Ile	Thr	His	Tyr	Ser	Pro	Arg	Thr	Glu
225					230					235					240
Tyr	Trp	Thr	Ile	Val	Gly	Asn	Thr	Asp	Arg	Gln	Phe	Tyr	Asn	Ala	Asn
			245						250					255	
Val	Leu	His	Asn	Cys	Leu	Tyr	Ile	Ile	Gly	Gly	Met	Ile	Asn	Asn	Arg
			260					265					270		
His	Val	Tyr	Ser	Val	Ser	Arg	Val	Asp	Leu	Lys	Thr	Lys	Lys	Trp	Lys
		275					280					285			
Thr	Val	Thr	Asn	Met	Ser	Ser	Leu	Lys	Ser	Glu	Val	Ser	Thr	Cys	Val
			290			295					300				
Asn	Asp	Gly	Lys	Leu	Tyr	Val	Ile	Gly	Gly	Leu	Glu	Phe	Ser	Ile	Ser
305					310					315					320
Thr	Gly	Val	Ala	Glu	Tyr	Leu	Lys	His	Gly	Thr	Ser	Lys	Trp	Ile	Arg
			325						330					335	
Leu	Pro	Asn	Leu	Ile	Thr	Pro	Arg	Tyr	Ser	Gly	Ala	Ser	Val	Phe	Val
		340						345					350		
Asn	Asp	Asp	Ile	Tyr	Val	Met	Gly	Gly	Val	Tyr	Thr	Thr	Tyr	Glu	Lys
		355					360					365			
Tyr	Val	Val	Leu	Asn	Asp	Val	Glu	Cys	Phe	Thr	Lys	Asn	Arg	Trp	Ile
		370				375					380				
Lys	Lys	Ser	Pro	Met	Pro	Arg	His	His	Ser	Ile	Val	Tyr	Ala	Val	Glu
385					390					395					400
Tyr	Asp	Gly	Asp	Ile	Tyr	Val	Ile	Thr	Gly	Ile	Thr	His	Glu	Thr	Arg
			405						410				415		
Asn	Tyr	Leu	Tyr	Lys	Tyr	Ile	Val	Lys	Glu	Asp	Lys	Trp	Ile	Glu	Leu
		420						425					430		
Tyr	Met	Tyr	Phe	Asn	His	Val	Gly	Lys	Met	Phe	Val	Cys	Ser	Cys	Gly
		435					440					445			
Asp	Tyr	Ile	Leu	Ile	Ile	Ala	Asp	Ala	Lys	Tyr	Glu	Tyr	Tyr	Pro	Lys
	450					455					460				
Ser	Asn	Thr	Trp	Asn	Leu	Phe	Asp	Met	Ser	Thr	Arg	Asn	Ile	Glu	Tyr
465					470					475					480
Tyr	Asp	Met	Phe	Thr	Lys	Asp	Glu	Thr	His	Lys	Ser	Leu	Pro	Ser	Phe
			485						490					495	
Leu	Ser	Asn	Cys	Glu	Lys	Gln	Phe	Leu	Gln						
			500					505							

<210> 71
 <211> 675
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(675)

<400> 71
 atg gtg aaa aat aat aaa ata agt aat agc tgc cga atg ata atg agt 48

Met	Val	Lys	Asn	Asn	Lys	Ile	Ser	Asn	Ser	Cys	Arg	Met	Ile	Met	Ser		
1				5					10					15			
act	aac	cct	aat	aat	att	tta	atg	aga	cat	ctc	aaa	aat	ctt	aca	gat	96	
Thr	Asn	Pro	Asn	Asn	Ile	Leu	Met	Arg	His	Leu	Lys	Asn	Leu	Thr	Asp		
			20					25					30				
gat	gaa	ttt	aaa	tgt	att	att	cat	cga	tca	tct	gat	ttt	ctt	tat	ttg	144	
Asp	Glu	Phe	Lys	Cys	Ile	Ile	His	Arg	Ser	Ser	Asp	Phe	Leu	Tyr	Leu		
		35					40					45					
tct	gat	cgt	gac	tat	act	agt	ata	acc	aaa	gaa	aca	tta	gtt	agt	gag	192	
Ser	Asp	Arg	Asp	Tyr	Thr	Ser	Ile	Thr	Lys	Glu	Thr	Leu	Val	Ser	Glu		
		50				55					60						
atc	gta	gaa	gaa	tat	ccg	gat	gat	tgt	aat	aaa	ata	tta	gct	att	ata	240	
Ile	Val	Glu	Glu	Tyr	Pro	Asp	Asp	Cys	Asn	Lys	Ile	Leu	Ala	Ile	Ile		
	65				70					75					80		
ttt	ttg	gtg	tta	gat	aaa	gac	ata	gat	gta	gat	ata	aaa	act	aaa	cta	288	
Phe	Leu	Val	Leu	Asp	Lys	Asp	Ile	Asp	Val	Asp	Ile	Lys	Thr	Lys	Leu		
				85					90					95			
aag	cct	aaa	ccc	gca	gtt	aga	ttt	gcc	att	cta	gac	aag	atg	act	gag	336	
Lys	Pro	Lys	Pro	Ala	Val	Arg	Phe	Ala	Ile	Leu	Asp	Lys	Met	Thr	Glu		
			100					105					110				
gat	att	aaa	cta	acg	gat	cta	gtc	aga	cat	tat	ttt	aga	tac	ata	gaa	384	
Asp	Ile	Lys	Leu	Thr	Asp	Leu	Val	Arg	His	Tyr	Phe	Arg	Tyr	Ile	Glu		
		115					120					125					
caa	gat	ata	cca	cta	ggg	ccg	ttg	ttc	aaa	aaa	ata	gat	tcg	tac	aga	432	
Gln	Asp	Ile	Pro	Leu	Gly	Pro	Leu	Phe	Lys	Lys	Ile	Asp	Ser	Tyr	Arg		
		130				135					140						
aca	aga	gcc	att	aat	aag	tat	tcg	aaa	gag	tta	gga	ttg	gct	act	gaa	480	
Thr	Arg	Ala	Ile	Asn	Lys	Tyr	Ser	Lys	Glu	Leu	Gly	Leu	Ala	Thr	Glu		
		145			150				155					160			
tac	ttt	aat	aag	tac	ggg	cat	tta	atg	ttt	tat	act	ctc	cct	ata	cca	528	
Tyr	Phe	Asn	Lys	Tyr	Gly	His	Leu	Met	Phe	Tyr	Thr	Leu	Pro	Ile	Pro		
				165					170					175			
tat	aac	aga	ttc	ttt	tgt	aga	aat	tcg	ata	ggc	ttt	tta	gcg	gtt	cta	576	
Tyr	Asn	Arg	Phe	Phe	Cys	Arg	Asn	Ser	Ile	Gly	Phe	Leu	Ala	Val	Leu		
			180					185					190				
tcg	cct	acg	ata	gga	cac	gta	aaa	gca	ttt	tat	aaa	ttc	ata	gaa	tac	624	
Ser	Pro	Thr	Ile	Gly	His	Val	Lys	Ala	Phe	Tyr	Lys	Phe	Ile	Glu	Tyr		
			195				200					205					
gtt	tct	ata	gat	gat	aga	cgg	aaa	ttt	aaa	aag	gaa	tta	atg	tcg	aaa	672	
Val	Ser	Ile	Asp	Asp	Arg	Arg	Lys	Phe	Lys	Lys	Glu	Leu	Met	Ser	Lys		
		210				215					220						
tga																675	
*																	

<210> 72
 <211> 224
 <212> PRT
 <213> vaccinia virus

<400> 72
 Met Val Lys Asn Asn Lys Ile Ser Asn Ser Cys Arg Met Ile Met Ser
 1 5 10 15
 Thr Asn Pro Asn Asn Ile Leu Met Arg His Leu Lys Asn Leu Thr Asp
 20 25 30
 Asp Glu Phe Lys Cys Ile Ile His Arg Ser Ser Asp Phe Leu Tyr Leu
 35 40 45
 Ser Asp Arg Asp Tyr Thr Ser Ile Thr Lys Glu Thr Leu Val Ser Glu
 50 55 60
 Ile Val Glu Glu Tyr Pro Asp Asp Cys Asn Lys Ile Leu Ala Ile Ile
 65 70 75 80
 Phe Leu Val Leu Asp Lys Asp Ile Asp Val Asp Ile Lys Thr Lys Leu
 85 90 95
 Lys Pro Lys Pro Ala Val Arg Phe Ala Ile Leu Asp Lys Met Thr Glu
 100 105 110
 Asp Ile Lys Leu Thr Asp Leu Val Arg His Tyr Phe Arg Tyr Ile Glu
 115 120 125
 Gln Asp Ile Pro Leu Gly Pro Leu Phe Lys Lys Ile Asp Ser Tyr Arg
 130 135 140
 Thr Arg Ala Ile Asn Lys Tyr Ser Lys Glu Leu Gly Leu Ala Thr Glu
 145 150 155 160
 Tyr Phe Asn Lys Tyr Gly His Leu Met Phe Tyr Thr Leu Pro Ile Pro
 165 170 175
 Tyr Asn Arg Phe Phe Cys Arg Asn Ser Ile Gly Phe Leu Ala Val Leu
 180 185 190
 Ser Pro Thr Ile Gly His Val Lys Ala Phe Tyr Lys Phe Ile Glu Tyr
 195 200 205
 Val Ser Ile Asp Asp Arg Arg Lys Phe Lys Lys Glu Leu Met Ser Lys
 210 215 220

<210> 73
 <211> 354
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(354)

<400> 73
 atg agg act cta ctt att aga tat att ctt tgg aga aat gac aac gat 48
 Met Arg Thr Leu Leu Ile Arg Tyr Ile Leu Trp Arg Asn Asp Asn Asp
 1 5 10 15
 caa acc tat tat aat gat gat ttt aaa aag ctt atg ttg ttg gat gaa 96
 Gln Thr Tyr Tyr Asn Asp Asp Phe Lys Lys Leu Met Leu Leu Asp Glu
 20 25 30
 ttg gta gat gac ggc gat gta tgt aca ttg att aag aac atg aga atg 144
 Leu Val Asp Asp Gly Asp Val Cys Thr Leu Ile Lys Asn Met Arg Met
 35 40 45
 acg ctg tcc gac ggt cca ttg cta gat aga ttg aat caa cca gtt aat 192

Thr	Leu	Ser	Asp	Gly	Pro	Leu	Leu	Asp	Arg	Leu	Asn	Gln	Pro	Val	Asn		
50						55					60						
aat	ata	gaa	gac	gct	aag	cga	atg	atc	gct	att	agt	gcc	aaa	gtg	gct	240	
Asn	Ile	Glu	Asp	Ala	Lys	Arg	Met	Ile	Ala	Ile	Ser	Ala	Lys	Val	Ala		
65					70				75						80		
aga	gac	att	ggt	gaa	cgt	tca	gaa	att	aga	tgg	gaa	gag	tca	ttc	acc	288	
Arg	Asp	Ile	Gly	Glu	Arg	Ser	Glu	Ile	Arg	Trp	Glu	Glu	Ser	Phe	Thr		
				85					90					95			
ata	ctc	ttt	agg	atg	att	gaa	aca	tat	ttt	gat	gat	cta	atg	att	gat	336	
Ile	Leu	Phe	Arg	Met	Ile	Glu	Thr	Tyr	Phe	Asp	Asp	Leu	Met	Ile	Asp		
			100					105					110				
cta	tat	ggt	gaa	aaa	taa											354	
Leu	Tyr	Gly	Glu	Lys	*												
		115															

<210> 74
 <211> 117
 <212> PRT
 <213> vaccinia virus

<400> 74																	
Met	Arg	Thr	Leu	Leu	Ile	Arg	Tyr	Ile	Leu	Trp	Arg	Asn	Asp	Asn	Asp		
1				5					10					15			
Gln	Thr	Tyr	Tyr	Asn	Asp	Asp	Phe	Lys	Lys	Leu	Met	Leu	Leu	Asp	Glu		
			20					25					30				
Leu	Val	Asp	Asp	Gly	Asp	Val	Cys	Thr	Leu	Ile	Lys	Asn	Met	Arg	Met		
		35				40						45					
Thr	Leu	Ser	Asp	Gly	Pro	Leu	Leu	Asp	Arg	Leu	Asn	Gln	Pro	Val	Asn		
50						55					60						
Asn	Ile	Glu	Asp	Ala	Lys	Arg	Met	Ile	Ala	Ile	Ser	Ala	Lys	Val	Ala		
65					70				75						80		
Arg	Asp	Ile	Gly	Glu	Arg	Ser	Glu	Ile	Arg	Trp	Glu	Glu	Ser	Phe	Thr		
			85						90					95			
Ile	Leu	Phe	Arg	Met	Ile	Glu	Thr	Tyr	Phe	Asp	Asp	Leu	Met	Ile	Asp		
			100					105					110				
Leu	Tyr	Gly	Glu	Lys													
		115															

<210> 75
 <211> 528
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(528)

<400> 75																	
atg	acg	tcc	tct	gca	atg	gat	aat	aat	gaa	cct	aaa	gta	cta	gaa	atg	48	
Met	Thr	Ser	Ser	Ala	Met	Asp	Asn	Asn	Glu	Pro	Lys	Val	Leu	Glu	Met		
1				5					10					15			
gta	tat	gat	gct	aca	att	tta	ccc	gaa	ggt	agt	agc	atg	gat	cca	aat	96	

Val	Tyr	Asp	Ala	Thr	Ile	Leu	Pro	Glu	Gly	Ser	Ser	Met	Asp	Pro	Asn		
			20					25					30				
atc	att	gat	tgt	ata	aac	aga	cac	atc	aat	atg	tgt	ata	caa	cg	acc	144	
Ile	Ile	Asp	Cys	Ile	Asn	Arg	His	Ile	Asn	Met	Cys	Ile	Gln	Arg	Thr		
		35				40					45						
tat	agt	tct	agt	ata	att	gcc	att	ttg	gat	aga	ttc	cta	aca	atg	aac	192	
Tyr	Ser	Ser	Ser	Ile	Ile	Ala	Ile	Leu	Asp	Arg	Phe	Leu	Thr	Met	Asn		
	50					55					60						
aag	gat	gaa	cta	aac	aat	aca	cag	tgt	cat	ata	att	aaa	gaa	ttt	atg	240	
Lys	Asp	Glu	Leu	Asn	Asn	Thr	Gln	Cys	His	Ile	Ile	Lys	Glu	Phe	Met		
65				70					75						80		
aca	tac	gaa	caa	atg	gcg	att	gac	cat	tat	gga	gga	tat	gtg	aac	gct	288	
Thr	Tyr	Glu	Gln	Met	Ala	Ile	Asp	His	Tyr	Gly	Gly	Tyr	Val	Asn	Ala		
				85					90					95			
att	cta	tat	caa	att	cgt	aaa	aga	cct	aat	caa	cat	cac	acc	att	gat	336	
Ile	Leu	Tyr	Gln	Ile	Arg	Lys	Arg	Pro	Asn	Gln	His	His	Thr	Ile	Asp		
			100					105					110				
ctg	ttt	aaa	aaa	ata	aaa	aga	acc	cgg	tat	gac	act	ttt	aaa	gtg	gat	384	
Leu	Phe	Lys	Lys	Ile	Lys	Arg	Thr	Arg	Tyr	Asp	Thr	Phe	Lys	Val	Asp		
		115					120					125					
ccc	gta	gaa	ttc	gtc	aaa	aaa	gtt	atc	gga	ttt	gta	tct	atc	ttg	aac	432	
Pro	Val	Glu	Phe	Val	Lys	Lys	Val	Ile	Gly	Phe	Val	Ser	Ile	Leu	Asn		
	130					135					140						
aaa	tat	aaa	ccg	gtt	tat	agt	tac	gtc	ctg	tac	gag	aac	gtc	ctg	tac	480	
Lys	Tyr	Lys	Pro	Val	Tyr	Ser	Tyr	Val	Leu	Tyr	Glu	Asn	Val	Leu	Tyr		
145				150					155					160			
gat	gag	ttc	aaa	tgt	ttc	att	aac	tac	gtg	gaa	act	aag	tat	ttc	taa	528	
Asp	Glu	Phe	Lys	Cys	Phe	Ile	Asn	Tyr	Val	Glu	Thr	Lys	Tyr	Phe	*		
			165					170						175			

<210> 76

<211> 175

<212> PRT

<213> vaccinia virus

<400> 76

Met	Thr	Ser	Ser	Ala	Met	Asp	Asn	Asn	Glu	Pro	Lys	Val	Leu	Glu	Met		
1				5					10					15			
Val	Tyr	Asp	Ala	Thr	Ile	Leu	Pro	Glu	Gly	Ser	Ser	Met	Asp	Pro	Asn		
			20					25					30				
Ile	Ile	Asp	Cys	Ile	Asn	Arg	His	Ile	Asn	Met	Cys	Ile	Gln	Arg	Thr		
		35				40					45						
Tyr	Ser	Ser	Ser	Ile	Ile	Ala	Ile	Leu	Asp	Arg	Phe	Leu	Thr	Met	Asn		
	50					55					60						
Lys	Asp	Glu	Leu	Asn	Asn	Thr	Gln	Cys	His	Ile	Ile	Lys	Glu	Phe	Met		
65				70					75						80		
Thr	Tyr	Glu	Gln	Met	Ala	Ile	Asp	His	Tyr	Gly	Gly	Tyr	Val	Asn	Ala		
				85					90					95			

Ile	Leu	Tyr	Gln	Ile	Arg	Lys	Arg	Pro	Asn	Gln	His	His	Thr	Ile	Asp
			100					105					110		
Leu	Phe	Lys	Lys	Ile	Lys	Arg	Thr	Arg	Tyr	Asp	Thr	Phe	Lys	Val	Asp
		115					120					125			
Pro	Val	Glu	Phe	Val	Lys	Lys	Val	Ile	Gly	Phe	Val	Ser	Ile	Leu	Asn
	130					135					140				
Lys	Tyr	Lys	Pro	Val	Tyr	Ser	Tyr	Val	Leu	Tyr	Glu	Asn	Val	Leu	Tyr
145					150					155					160
Asp	Glu	Phe	Lys	Cys	Phe	Ile	Asn	Tyr	Val	Glu	Thr	Lys	Tyr	Phe	
			165						170					175	

<210> 77
 <211> 1407
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1407)

<400> 77																
atg	ata	ttt	gtt	ata	gag	agt	aaa	ttg	ttg	caa	ata	tac	aga	aat	aga	48
Met	Ile	Phe	Val	Ile	Glu	Ser	Lys	Leu	Leu	Gln	Ile	Tyr	Arg	Asn	Arg	
1				5					10					15		
aat aga aat att aat ttt tat act aca atg gac aac att atg tcg gcc																96
Asn	Arg	Asn	Ile	Asn	Phe	Tyr	Thr	Thr	Met	Asp	Asn	Ile	Met	Ser	Ala	
			20					25					30			
gag tat tat cta tct ctt tat gcc aaa tat aat agt aaa aat tta gat																144
Glu	Tyr	Tyr	Leu	Ser	Leu	Tyr	Ala	Lys	Tyr	Asn	Ser	Lys	Asn	Leu	Asp	
		35					40					45				
gta ttt agg aat atg cta caa gct atc gaa cct tct gga aat aat tat																192
Val	Phe	Arg	Asn	Met	Leu	Gln	Ala	Ile	Glu	Pro	Ser	Gly	Asn	Asn	Tyr	
	50					55					60					
cac att cta cat gcg tat tgt gga att aaa gga cta gat gaa cga ttt																240
His	Ile	Leu	His	Ala	Tyr	Cys	Gly	Ile	Lys	Gly	Leu	Asp	Glu	Arg	Phe	
65					70					75					80	
gtc gaa gaa ctt ctt cat aga gga tac tct cca aat gag acg gat gat																288
Val	Glu	Glu	Leu	Leu	His	Arg	Gly	Tyr	Ser	Pro	Asn	Glu	Thr	Asp	Asp	
			85					90						95		
gat gga aat tat cca ttg cat ata gct tct aaa att aat aat aat aga																336
Asp	Gly	Asn	Tyr	Pro	Leu	His	Ile	Ala	Ser	Lys	Ile	Asn	Asn	Asn	Arg	
			100					105					110			
ata gtc gcg atg ctg ctg acg cac ggc gca gat cca aac gcg tgt gat																384
Ile	Val	Ala	Met	Leu	Leu	Thr	His	Gly	Ala	Asp	Pro	Asn	Ala	Cys	Asp	
		115					120					125				
aaa cat aat aaa aca cct cta tat tat ctc tcg gga aca gat gat gaa																432
Lys	His	Asn	Lys	Thr	Pro	Leu	Tyr	Tyr	Leu	Ser	Gly	Thr	Asp	Asp	Glu	
	130					135					140					
gtc ata gag aga ata aat tta ttg gta cag tat gga gcc aag att aac																480

Val	Ile	Glu	Arg	Ile	Asn	Leu	Leu	Val	Gln	Tyr	Gly	Ala	Lys	Ile	Asn		
145					150					155					160		
aac	tcg	gtt	gat	gaa	gaa	gga	tgt	ggc	ccg	ttg	ttg	gcg	tgt	aca	gat	528	
Asn	Ser	Val	Asp	Glu	Glu	Gly	Cys	Gly	Pro	Leu	Leu	Ala	Cys	Thr	Asp		
				165					170					175			
cct	tca	gaa	aga	gtg	ttt	aaa	aaa	ata	atg	tcc	atc	gga	ttc	gaa	gcc	576	
Pro	Ser	Glu	Arg	Val	Phe	Lys	Lys	Ile	Met	Ser	Ile	Gly	Phe	Glu	Ala		
				180				185					190				
agg	ata	gtg	gat	aaa	ttt	ggc	aaa	aat	cat	att	cat	aga	cat	ctt	atg	624	
Arg	Ile	Val	Asp	Lys	Phe	Gly	Lys	Asn	His	Ile	His	Arg	His	Leu	Met		
		195					200					205					
tca	gac	aat	cca	aaa	gct	tct	aca	atc	tca	tgg	atg	atg	aaa	cta	gga	672	
Ser	Asp	Asn	Pro	Lys	Ala	Ser	Thr	Ile	Ser	Trp	Met	Met	Lys	Leu	Gly		
		210				215					220						
att	agt	ccc	tca	aaa	cca	gat	cat	gat	gga	aat	aca	cct	ctc	cat	att	720	
Ile	Ser	Pro	Ser	Lys	Pro	Asp	His	Asp	Gly	Asn	Thr	Pro	Leu	His	Ile		
225					230					235					240		
gta	tgc	tct	aaa	aca	gtt	aag	tat	gta	gac	att	ata	gat	ctt	tta	ctt	768	
Val	Cys	Ser	Lys	Thr	Val	Lys	Tyr	Val	Asp	Ile	Ile	Asp	Leu	Leu	Leu		
				245					250					255			
cca	tca	acg	gat	gtt	aat	aaa	caa	aac	aaa	ttc	gga	gat	agt	cct	ctt	816	
Pro	Ser	Thr	Asp	Val	Asn	Lys	Gln	Asn	Lys	Phe	Gly	Asp	Ser	Pro	Leu		
			260					265					270				
aca	ctt	ctt	att	aag	aca	ttg	agc	cta	gcg	cat	ctt	att	aac	aaa	ttg	864	
Thr	Leu	Leu	Ile	Lys	Thr	Leu	Ser	Leu	Ala	His	Leu	Ile	Asn	Lys	Leu		
			275				280					285					
cta	tcg	act	agc	aat	gtt	att	acg	gat	caa	aca	gtt	aat	att	tgt	atc	912	
Leu	Ser	Thr	Ser	Asn	Val	Ile	Thr	Asp	Gln	Thr	Val	Asn	Ile	Cys	Ile		
			290			295					300						
ttt	tat	gat	aga	gat	gat	gtt	cta	gaa	att	att	aat	gat	aaa	gga	aag	960	
Phe	Tyr	Asp	Arg	Asp	Asp	Val	Leu	Glu	Ile	Ile	Asn	Asp	Lys	Gly	Lys		
305					310					315				320			
caa	tat	gat	ttt	aag	atg	gct	gtt	gaa	gtg	gga	tcc	ata	aga	tgc	gtc	1008	
Gln	Tyr	Asp	Phe	Lys	Met	Ala	Val	Glu	Val	Gly	Ser	Ile	Arg	Cys	Val		
				325					330					335			
aaa	tat	cta	tta	gac	aat	gat	ata	att	tgt	gaa	gat	gct	atg	tac	tac	1056	
Lys	Tyr	Leu	Leu	Asp	Asn	Asp	Ile	Ile	Cys	Glu	Asp	Ala	Met	Tyr	Tyr		
			340					345					350				
gct	gta	cta	tct	gaa	tac	aaa	aca	atg	gta	gac	tat	cta	ttg	ttc	aat	1104	
Ala	Val	Leu	Ser	Glu	Tyr	Lys	Thr	Met	Val	Asp	Tyr	Leu	Leu	Phe	Asn		
			355				360					365					
cat	ttt	agt	gta	gac	tct	gta	gtt	aac	ggc	cat	aca	tgt	atg	agc	gaa	1152	
His	Phe	Ser	Val	Asp	Ser	Val	Val	Asn	Gly	His	Thr	Cys	Met	Ser	Glu		
			370			375					380						

tgt	gta	aga	cta	aat	aac	cca	gtc	att	tta	tcg	aag	ctg	atg	tta	cat	1200
Cys	Val	Arg	Leu	Asn	Asn	Pro	Val	Ile	Leu	Ser	Lys	Leu	Met	Leu	His	
385					390					395					400	

aat	cct	act	tct	gag	acc	atg	tat	cta	act	atg	aaa	gct	ata	gaa	aaa	1248
Asn	Pro	Thr	Ser	Glu	Thr	Met	Tyr	Leu	Thr	Met	Lys	Ala	Ile	Glu	Lys	
				405					410					415		

gat	aga	cta	gat	aaa	tct	att	att	att	ccg	ttt	atc	gcg	tac	ttt	gta	1296
Asp	Arg	Leu	Asp	Lys	Ser	Ile	Ile	Ile	Pro	Phe	Ile	Ala	Tyr	Phe	Val	
			420					425					430			

ctt	atg	cat	ccg	gac	ttt	tgt	aaa	aat	cgt	aga	tac	ttt	act	tca	tat	1344
Leu	Met	His	Pro	Asp	Phe	Cys	Lys	Asn	Arg	Arg	Tyr	Phe	Thr	Ser	Tyr	
		435					440					445				

aaa	cgt	ttt	gta	act	gat	tat	gtt	cat	gaa	gga	gta	tct	tac	gaa	gta	1392
Lys	Arg	Phe	Val	Thr	Asp	Tyr	Val	His	Glu	Gly	Val	Ser	Tyr	Glu	Val	
	450					455					460					

ttc	gat	gat	tat	ttt												1407
Phe	Asp	Asp	Tyr	Phe												
465																

<210> 78
 <211> 469
 <212> PRT
 <213> vaccinia virus

<400> 78															
Met	Ile	Phe	Val	Ile	Glu	Ser	Lys	Leu	Leu	Gln	Ile	Tyr	Arg	Asn	Arg
1				5					10					15	
Asn	Arg	Asn	Ile	Asn	Phe	Tyr	Thr	Thr	Met	Asp	Asn	Ile	Met	Ser	Ala
			20					25					30		
Glu	Tyr	Tyr	Leu	Ser	Leu	Tyr	Ala	Lys	Tyr	Asn	Ser	Lys	Asn	Leu	Asp
		35					40					45			
Val	Phe	Arg	Asn	Met	Leu	Gln	Ala	Ile	Glu	Pro	Ser	Gly	Asn	Asn	Tyr
	50					55				60					
His	Ile	Leu	His	Ala	Tyr	Cys	Gly	Ile	Lys	Gly	Leu	Asp	Glu	Arg	Phe
65				70						75				80	
Val	Glu	Glu	Leu	Leu	His	Arg	Gly	Tyr	Ser	Pro	Asn	Glu	Thr	Asp	Asp
			85						90					95	
Asp	Gly	Asn	Tyr	Pro	Leu	His	Ile	Ala	Ser	Lys	Ile	Asn	Asn	Asn	Arg
		100						105					110		
Ile	Val	Ala	Met	Leu	Leu	Thr	His	Gly	Ala	Asp	Pro	Asn	Ala	Cys	Asp
		115					120					125			
Lys	His	Asn	Lys	Thr	Pro	Leu	Tyr	Tyr	Leu	Ser	Gly	Thr	Asp	Asp	Glu
	130					135					140				
Val	Ile	Glu	Arg	Ile	Asn	Leu	Leu	Val	Gln	Tyr	Gly	Ala	Lys	Ile	Asn
145					150					155					160
Asn	Ser	Val	Asp	Glu	Glu	Gly	Cys	Gly	Pro	Leu	Leu	Ala	Cys	Thr	Asp
			165						170					175	
Pro	Ser	Glu	Arg	Val	Phe	Lys	Lys	Ile	Met	Ser	Ile	Gly	Phe	Glu	Ala
			180					185					190		
Arg	Ile	Val	Asp	Lys	Phe	Gly	Lys	Asn	His	Ile	His	Arg	His	Leu	Met
		195					200					205			
Ser	Asp	Asn	Pro	Lys	Ala	Ser	Thr	Ile	Ser	Trp	Met	Met	Lys	Leu	Gly
	210					215					220				

Ile Ser Pro Ser Lys Pro Asp His Asp Gly Asn Thr Pro Leu His Ile
 225 230 235 240
 Val Cys Ser Lys Thr Val Lys Tyr Val Asp Ile Ile Asp Leu Leu Leu
 245 250 255
 Pro Ser Thr Asp Val Asn Lys Gln Asn Lys Phe Gly Asp Ser Pro Leu
 260 265 270
 Thr Leu Leu Ile Lys Thr Leu Ser Leu Ala His Leu Ile Asn Lys Leu
 275 280 285
 Leu Ser Thr Ser Asn Val Ile Thr Asp Gln Thr Val Asn Ile Cys Ile
 290 295 300
 Phe Tyr Asp Arg Asp Asp Val Leu Glu Ile Ile Asn Asp Lys Gly Lys
 305 310 315 320
 Gln Tyr Asp Phe Lys Met Ala Val Glu Val Gly Ser Ile Arg Cys Val
 325 330 335
 Lys Tyr Leu Leu Asp Asn Asp Ile Ile Cys Glu Asp Ala Met Tyr Tyr
 340 345 350
 Ala Val Leu Ser Glu Tyr Lys Thr Met Val Asp Tyr Leu Leu Phe Asn
 355 360 365
 His Phe Ser Val Asp Ser Val Val Asn Gly His Thr Cys Met Ser Glu
 370 375 380
 Cys Val Arg Leu Asn Asn Pro Val Ile Leu Ser Lys Leu Met Leu His
 385 390 395 400
 Asn Pro Thr Ser Glu Thr Met Tyr Leu Thr Met Lys Ala Ile Glu Lys
 405 410 415
 Asp Arg Leu Asp Lys Ser Ile Ile Ile Pro Phe Ile Ala Tyr Phe Val
 420 425 430
 Leu Met His Pro Asp Phe Cys Lys Asn Arg Arg Tyr Phe Thr Ser Tyr
 435 440 445
 Lys Arg Phe Val Thr Asp Tyr Val His Glu Gly Val Ser Tyr Glu Val
 450 455 460
 Phe Asp Asp Tyr Phe
 465

<210> 79
 <211> 663
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(663)

<400> 79
 atg gtt tac aaa tta gtc ttg ctc ttt tgt atc gca tct ctc ggg tat 48
 Met Val Tyr Lys Leu Val Leu Leu Phe Cys Ile Ala Ser Leu Gly Tyr
 1 5 10 15
 tcg gta gaa tac aag aat act ata tgt cct cct cga caa gat tac cgg 96
 Ser Val Glu Tyr Lys Asn Thr Ile Cys Pro Pro Arg Gln Asp Tyr Arg
 20 25 30
 tat tgg tac ttt gcc gcc gaa ctc act att ggt gta aat tat gac att 144
 Tyr Trp Tyr Phe Ala Ala Glu Leu Thr Ile Gly Val Asn Tyr Asp Ile
 35 40 45
 aat tct act att att ggt gag tgt cat atg agt gaa agc tat atc gac 192
 Asn Ser Thr Ile Ile Gly Glu Cys His Met Ser Glu Ser Tyr Ile Asp
 50 55 60

aga aat gct aac ata gtg ttg act gga tac gga cta gaa ata aac atg	240
Arg Asn Ala Asn Ile Val Leu Thr Gly Tyr Gly Leu Glu Ile Asn Met	
65 70 75 80	
acc atc atg gat acg gat cag aga ttt gtg gca gcg gct gag ggt gtt	288
Thr Ile Met Asp Thr Asp Gln Arg Phe Val Ala Ala Ala Glu Gly Val	
85 90 95	
ggt aaa gat aat aaa cta tct gtt ctg ttg ttt acc act cag cgg cta	336
Gly Lys Asp Asn Lys Leu Ser Val Leu Leu Phe Thr Thr Gln Arg Leu	
100 105 110	
gat aaa gtt cat cac aat att agt gtg aca ata aca tgt atg gaa atg	384
Asp Lys Val His His Asn Ile Ser Val Thr Ile Thr Cys Met Glu Met	
115 120 125	
aat tgt gga acc aca aaa tac gat agc gat ctt ccg gaa tca att cat	432
Asn Cys Gly Thr Thr Lys Tyr Asp Ser Asp Leu Pro Glu Ser Ile His	
130 135 140	
aaa tca tca tcg tgt gat ata act ata aat gga tca tgt gtg aca tgt	480
Lys Ser Ser Ser Cys Asp Ile Thr Ile Asn Gly Ser Cys Val Thr Cys	
145 150 155 160	
gtt aac tta gag act gat cca aca aag att aat ccc cat tac cta cac	528
Val Asn Leu Glu Thr Asp Pro Thr Lys Ile Asn Pro His Tyr Leu His	
165 170 175	
ccc aag gat aaa tat ctt tat cat aat tct gag tat ggc atg cgt ggt	576
Pro Lys Asp Lys Tyr Leu Tyr His Asn Ser Glu Tyr Gly Met Arg Gly	
180 185 190	
agt tat ggc gtg aca ttt ata gat gaa cta aac cag tgc ctt ctt gac	624
Ser Tyr Gly Val Thr Phe Ile Asp Glu Leu Asn Gln Cys Leu Leu Asp	
195 200 205	
ata aaa gaa cta agt tat gat att tgt tat aga gag taa	663
Ile Lys Glu Leu Ser Tyr Asp Ile Cys Tyr Arg Glu *	
210 215 220	

<210> 80

<211> 220

<212> PRT

<213> vaccinia virus

<400> 80

Met Val Tyr Lys Leu Val Leu Leu Phe Cys Ile Ala Ser Leu Gly Tyr	
1 5 10 15	
Ser Val Glu Tyr Lys Asn Thr Ile Cys Pro Pro Arg Gln Asp Tyr Arg	
20 25 30	
Tyr Trp Tyr Phe Ala Ala Glu Leu Thr Ile Gly Val Asn Tyr Asp Ile	
35 40 45	
Asn Ser Thr Ile Ile Gly Glu Cys His Met Ser Glu Ser Tyr Ile Asp	
50 55 60	
Arg Asn Ala Asn Ile Val Leu Thr Gly Tyr Gly Leu Glu Ile Asn Met	
65 70 75 80	
Thr Ile Met Asp Thr Asp Gln Arg Phe Val Ala Ala Ala Glu Gly Val	

				85					90					95			
Gly	Lys	Asp	Asn	Lys	Leu	Ser	Val	Leu	Leu	Phe	Thr	Thr	Gln	Arg	Leu		
			100					105					110				
Asp	Lys	Val	His	His	Asn	Ile	Ser	Val	Thr	Ile	Thr	Cys	Met	Glu	Met		
		115					120					125					
Asn	Cys	Gly	Thr	Thr	Lys	Tyr	Asp	Ser	Asp	Leu	Pro	Glu	Ser	Ile	His		
	130					135				140							
Lys	Ser	Ser	Ser	Cys	Asp	Ile	Thr	Ile	Asn	Gly	Ser	Cys	Val	Thr	Cys		
145				150					155						160		
Val	Asn	Leu	Glu	Thr	Asp	Pro	Thr	Lys	Ile	Asn	Pro	His	Tyr	Leu	His		
			165					170						175			
Pro	Lys	Asp	Lys	Tyr	Leu	Tyr	His	Asn	Ser	Glu	Tyr	Gly	Met	Arg	Gly		
		180					185						190				
Ser	Tyr	Gly	Val	Thr	Phe	Ile	Asp	Glu	Leu	Asn	Gln	Cys	Leu	Leu	Asp		
	195					200					205						
Ile	Lys	Glu	Leu	Ser	Tyr	Asp	Ile	Cys	Tyr	Arg	Glu						
	210					215					220						

<210> 81
 <211> 852
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(852)

<400> 81																
atg	gat	ctg	tca	cga	att	aat	act	tgg	aag	tct	aag	cag	ctg	aaa	agc	48
Met	Asp	Leu	Ser	Arg	Ile	Asn	Thr	Trp	Lys	Ser	Lys	Gln	Leu	Lys	Ser	
1				5				10					15			
ttt	ctc	tct	agt	aaa	gat	aca	ttt	aag	gcg	gat	gtc	cat	gga	cat	agt	96
Phe	Leu	Ser	Ser	Lys	Asp	Thr	Phe	Lys	Ala	Asp	Val	His	Gly	His	Ser	
			20					25					30			
gcc	ttg	tat	tat	gca	ata	gct	gat	aat	aac	gtg	cgt	cta	gta	tgt	acg	144
Ala	Leu	Tyr	Tyr	Ala	Ile	Ala	Asp	Asn	Asn	Val	Arg	Leu	Val	Cys	Thr	
		35					40					45				
ttg	ttg	aac	gct	gga	gca	ttg	aaa	aat	ctt	cta	gag	aat	gaa	ttt	cca	192
Leu	Leu	Asn	Ala	Gly	Ala	Leu	Lys	Asn	Leu	Leu	Glu	Asn	Glu	Phe	Pro	
	50					55					60					
tta	cat	cag	gca	gcc	aca	ttg	gaa	gat	acc	aaa	ata	gta	aag	att	ttg	240
Leu	His	Gln	Ala	Ala	Thr	Leu	Glu	Asp	Thr	Lys	Ile	Val	Lys	Ile	Leu	
	65				70				75						80	
cta	ttc	agt	gga	ctg	gat	gat	tca	caa	ttt	gat	gac	aag	gga	aac	acc	288
Leu	Phe	Ser	Gly	Leu	Asp	Asp	Ser	Gln	Phe	Asp	Asp	Lys	Gly	Asn	Thr	
			85					90						95		
gca	ttg	tat	tat	gcg	gtt	gat	agt	ggt	aac	atg	caa	acg	gta	aaa	ctg	336
Ala	Leu	Tyr	Tyr	Ala	Val	Asp	Ser	Gly	Asn	Met	Gln	Thr	Val	Lys	Leu	
			100					105					110			
ttt	gtt	aag	aaa	aat	tgg	aga	ctg	atg	ttc	tat	ggg	aaa	act	gga	tgg	384
Phe	Val	Lys	Lys	Asn	Trp	Arg	Leu	Met	Phe	Tyr	Gly	Lys	Thr	Gly	Trp	

115	120	125	
aaa act tca ttt tat cat gcc gtc atg ctt aat gat gta agt att gtt			432
Lys Thr Ser Phe Tyr His Ala Val Met Leu Asn Asp Val Ser Ile Val			
130	135	140	
tcc tac ttt ctt tca gag ata cca tct act ttt gat ctg gct att ctc			480
Ser Tyr Phe Leu Ser Glu Ile Pro Ser Thr Phe Asp Leu Ala Ile Leu			
145	150	155	160
ctt agt tgt att cac atc act ata aaa aat gga cac gtg gat atg atg			528
Leu Ser Cys Ile His Ile Thr Ile Lys Asn Gly His Val Asp Met Met			
165	170	175	
att ctc ttg ctc gac tat atg acg tcg aca aac acc aat aat tcc ctt			576
Ile Leu Leu Leu Asp Tyr Met Thr Ser Thr Asn Thr Asn Asn Ser Leu			
180	185	190	
ctc ttc att ccg gac att aaa ttg gct ata gat aat aaa gac att gag			624
Leu Phe Ile Pro Asp Ile Lys Leu Ala Ile Asp Asn Lys Asp Ile Glu			
195	200	205	
atg tta cag gct ctg ttc aaa tac gac att aat atc tat tct gct aat			672
Met Leu Gln Ala Leu Phe Lys Tyr Asp Ile Asn Ile Tyr Ser Ala Asn			
210	215	220	
ctg gaa aat gta cta ttg gat gat gcc gaa ata gct aaa atg att ata			720
Leu Glu Asn Val Leu Leu Asp Asp Ala Glu Ile Ala Lys Met Ile Ile			
225	230	235	240
gaa aag cat gtt gaa tac aag tct gac tcc tat aca aaa gat ctc gat			768
Glu Lys His Val Glu Tyr Lys Ser Asp Ser Tyr Thr Lys Asp Leu Asp			
245	250	255	
ata gtc aag aat aat aaa ttg gat gaa ata att agc aaa aac aag gaa			816
Ile Val Lys Asn Asn Lys Leu Asp Glu Ile Ile Ser Lys Asn Lys Glu			
260	265	270	
ctc aga ctc atg tac gtc aat tgt gta aag aaa aac			852
Leu Arg Leu Met Tyr Val Asn Cys Val Lys Lys Asn			
275	280		

<210> 82

<211> 284

<212> PRT

<213> vaccinia virus

<400> 82

Met Asp Leu Ser Arg Ile Asn Thr Trp Lys Ser Lys Gln Leu Lys Ser	
1 5 10 15	
Phe Leu Ser Ser Lys Asp Thr Phe Lys Ala Asp Val His Gly His Ser	
20 25 30	
Ala Leu Tyr Tyr Ala Ile Ala Asp Asn Asn Val Arg Leu Val Cys Thr	
35 40 45	
Leu Leu Asn Ala Gly Ala Leu Lys Asn Leu Leu Glu Asn Glu Phe Pro	
50 55 60	
Leu His Gln Ala Ala Thr Leu Glu Asp Thr Lys Ile Val Lys Ile Leu	
65 70 75 80	

Leu Phe Ser Gly Leu Asp Asp Ser Gln Phe Asp Asp Lys Gly Asn Thr
 85 90 95
 Ala Leu Tyr Tyr Ala Val Asp Ser Gly Asn Met Gln Thr Val Lys Leu
 100 105 110
 Phe Val Lys Lys Asn Trp Arg Leu Met Phe Tyr Gly Lys Thr Gly Trp
 115 120 125
 Lys Thr Ser Phe Tyr His Ala Val Met Leu Asn Asp Val Ser Ile Val
 130 135 140
 Ser Tyr Phe Leu Ser Glu Ile Pro Ser Thr Phe Asp Leu Ala Ile Leu
 145 150 155 160
 Leu Ser Cys Ile His Ile Thr Ile Lys Asn Gly His Val Asp Met Met
 165 170 175
 Ile Leu Leu Leu Asp Tyr Met Thr Ser Thr Asn Thr Asn Asn Ser Leu
 180 185 190
 Leu Phe Ile Pro Asp Ile Lys Leu Ala Ile Asp Asn Lys Asp Ile Glu
 195 200 205
 Met Leu Gln Ala Leu Phe Lys Tyr Asp Ile Asn Ile Tyr Ser Ala Asn
 210 215 220
 Leu Glu Asn Val Leu Leu Asp Asp Ala Glu Ile Ala Lys Met Ile Ile
 225 230 235 240
 Glu Lys His Val Glu Tyr Lys Ser Asp Ser Tyr Thr Lys Asp Leu Asp
 245 250 255
 Ile Val Lys Asn Asn Lys Leu Asp Glu Ile Ile Ser Lys Asn Lys Glu
 260 265 270
 Leu Arg Leu Met Tyr Val Asn Cys Val Lys Lys Asn
 275 280

<210> 83
 <211> 1107
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1107)

<400> 83
 atg att gcg tta ttg ata cta tcg tta acg tgt tca gtg tct acc tat 48
 Met Ile Ala Leu Leu Ile Leu Ser Leu Thr Cys Ser Val Ser Thr Tyr
 1 5 10 15

 cgt ctg caa gga ttt acc aat gcc ggt ata gta gcg tat aaa aat att 96
 Arg Leu Gln Gly Phe Thr Asn Ala Gly Ile Val Ala Tyr Lys Asn Ile
 20 25 30

 caa gat gat aat att gtc ttc tca ccg ttt ggt tat tcg ttt tct atg 144
 Gln Asp Asp Asn Ile Val Phe Ser Pro Phe Gly Tyr Ser Phe Ser Met
 35 40 45

 ttt atg tcg cta ttg cct gca tca ggt aat act aga ata gaa tta ttg 192
 Phe Met Ser Leu Leu Pro Ala Ser Gly Asn Thr Arg Ile Glu Leu Leu
 50 55 60

 aag act atg gat ttg aga aaa aga gat ctg ggt cca gca ttt aca gaa 240
 Lys Thr Met Asp Leu Arg Lys Arg Asp Leu Gly Pro Ala Phe Thr Glu
 65 70 75 80

 tta ata tca gga tta gct aag ctg aaa aca tct aaa tat acg tac act 288

Leu	Ile	Ser	Gly	Leu	Ala	Lys	Leu	Lys	Thr	Ser	Lys	Tyr	Thr	Tyr	Thr		
				85					90					95			
gat	cta	act	tat	caa	agt	ttc	gta	gat	aat	act	gtg	tgt	att	aaa	ccg	336	
Asp	Leu	Thr	Tyr	Gln	Ser	Phe	Val	Asp	Asn	Thr	Val	Cys	Ile	Lys	Pro		
			100					105					110				
tcg	tat	tat	caa	caa	tat	cat	aga	ttc	ggc	cta	tat	aga	tta	aac	ttt	384	
Ser	Tyr	Tyr	Gln	Gln	Tyr	His	Arg	Phe	Gly	Leu	Tyr	Arg	Leu	Asn	Phe		
			115				120					125					
aga	cga	gat	gcg	gtt	aat	aaa	att	aat	tct	ata	gta	gaa	cgt	aga	tcc	432	
Arg	Arg	Asp	Ala	Val	Asn	Lys	Ile	Asn	Ser	Ile	Val	Glu	Arg	Arg	Ser		
			130			135					140						
ggt	atg	tct	aat	gta	gta	gat	tct	aat	atg	ctc	gac	aat	aat	act	cta	480	
Gly	Met	Ser	Asn	Val	Val	Asp	Ser	Asn	Met	Leu	Asp	Asn	Asn	Thr	Leu		
					150					155					160		
tgg	gca	atc	att	aat	act	ata	tat	ttt	aaa	ggt	ata	tgg	caa	tat	ccg	528	
Trp	Ala	Ile	Ile	Asn	Thr	Ile	Tyr	Phe	Lys	Gly	Ile	Trp	Gln	Tyr	Pro		
				165					170					175			
ttt	gat	atc	act	aaa	aca	cgc	aat	gct	agt	ttt	act	aat	aag	tac	ggt	576	
Phe	Asp	Ile	Thr	Lys	Thr	Arg	Asn	Ala	Ser	Phe	Thr	Asn	Lys	Tyr	Gly		
			180					185					190				
acg	aaa	acg	gtt	ccc	atg	atg	aac	gta	gtt	act	aaa	ttg	caa	gga	aat	624	
Thr	Lys	Thr	Val	Pro	Met	Met	Asn	Val	Val	Thr	Lys	Leu	Gln	Gly	Asn		
			195				200					205					
aca	atc	aca	atc	gat	gac	gaa	gaa	tat	gat	atg	gtg	cgc	ctt	ccg	tat	672	
Thr	Ile	Thr	Ile	Asp	Asp	Glu	Glu	Tyr	Asp	Met	Val	Arg	Leu	Pro	Tyr		
			210			215					220						
aag	gat	gct	aat	att	agt	atg	tac	ctg	gca	ata	ggt	gat	aat	atg	acc	720	
Lys	Asp	Ala	Asn	Ile	Ser	Met	Tyr	Leu	Ala	Ile	Gly	Asp	Asn	Met	Thr		
					230					235					240		
cat	ttc	aca	gat	tct	att	acg	gct	gca	aaa	tta	gac	tat	tgg	tcg	ttt	768	
His	Phe	Thr	Asp	Ser	Ile	Thr	Ala	Ala	Lys	Leu	Asp	Tyr	Trp	Ser	Phe		
				245					250					255			
caa	tta	ggg	aat	aaa	gtg	tac	aat	ctt	aaa	ctc	cct	aga	ttt	tct	atc	816	
Gln	Leu	Gly	Asn	Lys	Val	Tyr	Asn	Leu	Lys	Leu	Pro	Arg	Phe	Ser	Ile		
			260					265					270				
gaa	aat	aag	agg	gat	att	aag	tcg	ata	gcc	gaa	atg	atg	gct	cct	agt	864	
Glu	Asn	Lys	Arg	Asp	Ile	Lys	Ser	Ile	Ala	Glu	Met	Met	Ala	Pro	Ser		
			275				280					285					
atg	ttt	aat	cca	gat	aat	gcg	tcg	ttt	aaa	cat	atg	act	agg	gac	cca	912	
Met	Phe	Asn	Pro	Asp	Asn	Ala	Ser	Phe	Lys	His	Met	Thr	Arg	Asp	Pro		
			290			295					300						
tta	tat	att	tat	aaa	atg	ttt	cag	aat	gca	aag	ata	gat	gtc	gac	gaa	960	
Leu	Tyr	Ile	Tyr	Lys	Met	Phe	Gln	Asn	Ala	Lys	Ile	Asp	Val	Asp	Glu		
					310					315					320		

caa gga act gta gca gag gca tct act atc atg gta gct acg gcg aga	1008
Gln Gly Thr Val Ala Glu Ala Ser Thr Ile Met Val Ala Thr Ala Arg	
325 330 335	
tca tct cct gaa aaa ctg gaa ttt aat aca cca ttt gtg ttc atc atc	1056
Ser Ser Pro Glu Lys Leu Glu Phe Asn Thr Pro Phe Val Phe Ile Ile	
340 345 350	
aga cat gat att act gga ttt ata ttg ttt atg ggt aag gtg gaa tct	1104
Arg His Asp Ile Thr Gly Phe Ile Leu Phe Met Gly Lys Val Glu Ser	
355 360 365	
cct	1107
Pro	

<210> 84
 <211> 369
 <212> PRT
 <213> vaccinia virus

<400> 84

Met Ile Ala Leu Leu Ile Leu Ser Leu Thr Cys Ser Val Ser Thr Tyr	
1 5 10 15	
Arg Leu Gln Gly Phe Thr Asn Ala Gly Ile Val Ala Tyr Lys Asn Ile	
20 25 30	
Gln Asp Asp Asn Ile Val Phe Ser Pro Phe Gly Tyr Ser Phe Ser Met	
35 40 45	
Phe Met Ser Leu Leu Pro Ala Ser Gly Asn Thr Arg Ile Glu Leu Leu	
50 55 60	
Lys Thr Met Asp Leu Arg Lys Arg Asp Leu Gly Pro Ala Phe Thr Glu	
65 70 75 80	
Leu Ile Ser Gly Leu Ala Lys Leu Lys Thr Ser Lys Tyr Thr Tyr Thr	
85 90 95	
Asp Leu Thr Tyr Gln Ser Phe Val Asp Asn Thr Val Cys Ile Lys Pro	
100 105 110	
Ser Tyr Tyr Gln Gln Tyr His Arg Phe Gly Leu Tyr Arg Leu Asn Phe	
115 120 125	
Arg Arg Asp Ala Val Asn Lys Ile Asn Ser Ile Val Glu Arg Arg Ser	
130 135 140	
Gly Met Ser Asn Val Val Asp Ser Asn Met Leu Asp Asn Asn Thr Leu	
145 150 155 160	
Trp Ala Ile Ile Asn Thr Ile Tyr Phe Lys Gly Ile Trp Gln Tyr Pro	
165 170 175	
Phe Asp Ile Thr Lys Thr Arg Asn Ala Ser Phe Thr Asn Lys Tyr Gly	
180 185 190	
Thr Lys Thr Val Pro Met Met Asn Val Val Thr Lys Leu Gln Gly Asn	
195 200 205	
Thr Ile Thr Ile Asp Asp Glu Glu Tyr Asp Met Val Arg Leu Pro Tyr	
210 215 220	
Lys Asp Ala Asn Ile Ser Met Tyr Leu Ala Ile Gly Asp Asn Met Thr	
225 230 235 240	
His Phe Thr Asp Ser Ile Thr Ala Ala Lys Leu Asp Tyr Trp Ser Phe	
245 250 255	
Gln Leu Gly Asn Lys Val Tyr Asn Leu Lys Leu Pro Arg Phe Ser Ile	
260 265 270	
Glu Asn Lys Arg Asp Ile Lys Ser Ile Ala Glu Met Met Ala Pro Ser	
275 280 285	

Met	Phe	Asn	Pro	Asp	Asn	Ala	Ser	Phe	Lys	His	Met	Thr	Arg	Asp	Pro
	290					295					300				
Leu	Tyr	Ile	Tyr	Lys	Met	Phe	Gln	Asn	Ala	Lys	Ile	Asp	Val	Asp	Glu
305					310					315					320
Gln	Gly	Thr	Val	Ala	Glu	Ala	Ser	Thr	Ile	Met	Val	Ala	Thr	Ala	Arg
				325					330					335	
Ser	Ser	Pro	Glu	Lys	Leu	Glu	Phe	Asn	Thr	Pro	Phe	Val	Phe	Ile	Ile
			340					345					350		
Arg	His	Asp	Ile	Thr	Gly	Phe	Ile	Leu	Phe	Met	Gly	Lys	Val	Glu	Ser
		355					360					365			
Pro															

<210> 85
 <211> 264
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(264)

<400> 85																
atg	ctt	gca	ttt	tgt	tat	tcg	ttg	ccc	aat	gcg	ggg	gat	gta	ata	aag	48
Met	Leu	Ala	Phe	Cys	Tyr	Ser	Leu	Pro	Asn	Ala	Gly	Asp	Val	Ile	Lys	
1				5					10					15		
ggc aga gta tac gag aat gat tat gct cta tat att tat ctt ttt gac															96	
Gly	Arg	Val	Tyr	Glu	Asn	Asp	Tyr	Ala	Leu	Tyr	Ile	Tyr	Leu	Phe	Asp	
			20					25					30			
tat cct cac ttt gaa gct atc ttg gcg gag agt gtt aag atg cat atg															144	
Tyr	Pro	His	Phe	Glu	Ala	Ile	Leu	Ala	Glu	Ser	Val	Lys	Met	His	Met	
		35					40					45				
gat aga tat gtt gaa tat agg gat aaa ctg gta ggg aaa act gta aaa															192	
Asp	Arg	Tyr	Val	Glu	Tyr	Arg	Asp	Lys	Leu	Val	Gly	Lys	Thr	Val	Lys	
		50				55					60					
gtt aaa gtg att aga gtt gat tat aca aaa gga tat ata gat gtc aat															240	
Val	Lys	Val	Ile	Arg	Val	Asp	Tyr	Thr	Lys	Gly	Tyr	Ile	Asp	Val	Asn	
	65				70				75						80	
tac aaa agg atg tgt aga cat caa															264	
Tyr	Lys	Arg	Met	Cys	Arg	His	Gln									
				85												

<210> 86
 <211> 88
 <212> PRT
 <213> vaccinia virus

<400> 86															
Met	Leu	Ala	Phe	Cys	Tyr	Ser	Leu	Pro	Asn	Ala	Gly	Asp	Val	Ile	Lys
1				5					10					15	
Gly	Arg	Val	Tyr	Glu	Asn	Asp	Tyr	Ala	Leu	Tyr	Ile	Tyr	Leu	Phe	Asp
			20					25					30		

Tyr Pro His Phe Glu Ala Ile Leu Ala Glu Ser Val Lys Met His Met
 35 40 45
 Asp Arg Tyr Val Glu Tyr Arg Asp Lys Leu Val Gly Lys Thr Val Lys
 50 55 60
 Val Lys Val Ile Arg Val Asp Tyr Thr Lys Gly Tyr Ile Asp Val Asn
 65 70 75 80
 Tyr Lys Arg Met Cys Arg His Gln
 85

<210> 87
 <211> 1272
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1272)

<400> 87
 atg aat ccg gat aat aca atc gca gtg att aca gag act att cct ata 48
 Met Asn Pro Asp Asn Thr Ile Ala Val Ile Thr Glu Thr Ile Pro Ile
 1 5 10 15

 ggt atg caa ttt gat aaa gta tat ttg tct aca ttt aac atg tgg agg 96
 Gly Met Gln Phe Asp Lys Val Tyr Leu Ser Thr Phe Asn Met Trp Arg
 20 25 30

 gaa att cta tcc aat acc aca aaa aca cta gat ata tca tct ttt tat 144
 Glu Ile Leu Ser Asn Thr Thr Lys Thr Leu Asp Ile Ser Ser Phe Tyr
 35 40 45

 tgg agt tta tcg gat gaa gtg ggt acg aat ttc ggc acg ata ata tta 192
 Trp Ser Leu Ser Asp Glu Val Gly Thr Asn Phe Gly Thr Ile Ile Leu
 50 55 60

 aac gag att gta caa tta ccc aaa aga gga gta aga gtt aga gta gcc 240
 Asn Glu Ile Val Gln Leu Pro Lys Arg Gly Val Arg Val Arg Val Ala
 65 70 75 80

 gtc aat aaa tct aac aaa cca tta aag gat gtt gaa aga cta caa atg 288
 Val Asn Lys Ser Asn Lys Pro Leu Lys Asp Val Glu Arg Leu Gln Met
 85 90 95

 gcc gga gtt gaa gta cga tac ata gat att aca aat atc cta gga gga 336
 Ala Gly Val Glu Val Arg Tyr Ile Asp Ile Thr Asn Ile Leu Gly Gly
 100 105 110

 gtt ctt cat aca aaa ttt tgg ata tct gat aat aca cat att tat tta 384
 Val Leu His Thr Lys Phe Trp Ile Ser Asp Asn Thr His Ile Tyr Leu
 115 120 125

 gga agc gct aac atg gat tgg aga tca cta act cag gtc aaa gaa ttg 432
 Gly Ser Ala Asn Met Asp Trp Arg Ser Leu Thr Gln Val Lys Glu Leu
 130 135 140

 ggt att gcg atc ttc aat aat agg aac ttg gca gcg gat ctc act caa 480
 Gly Ile Ala Ile Phe Asn Asn Arg Asn Leu Ala Ala Asp Leu Thr Gln
 145 150 155 160

att ttt gag gta tac tgg tat ctt gga gtt aac aat cta cca tat aat	528
Ile Phe Glu Val Tyr Trp Tyr Leu Gly Val Asn Asn Leu Pro Tyr Asn	
165 170 175	
tgg aaa aac ttt tat ccg tgg tat tat aat aca gat cat cct ctt agt	576
Trp Lys Asn Phe Tyr Pro Ser Tyr Tyr Asn Thr Asp His Pro Leu Ser	
180 185 190	
att aac gta agt ggt gtt cca cac tct gta ttt att gct tct gca ccg	624
Ile Asn Val Ser Gly Val Pro His Ser Val Phe Ile Ala Ser Ala Pro	
195 200 205	
caa caa cta tgt act atg gaa aga acc aat gat tta acc gct tta ttg	672
Gln Gln Leu Cys Thr Met Glu Arg Thr Asn Asp Leu Thr Ala Leu Leu	
210 215 220	
tca tgt att aga aat gcg agt aaa ttc gtt tat gta tct gtt atg aac	720
Ser Cys Ile Arg Asn Ala Ser Lys Phe Val Tyr Val Ser Val Met Asn	
225 230 235 240	
ttt atc cct att att tat tgg aag gcg ggt aaa att ttg ttt tgg cct	768
Phe Ile Pro Ile Ile Tyr Ser Lys Ala Gly Lys Ile Leu Phe Trp Pro	
245 250 255	
tat ata gaa gat gaa tta aga aga tcc gct ata gac aga caa gta tcc	816
Tyr Ile Glu Asp Glu Leu Arg Arg Ser Ala Ile Asp Arg Gln Val Ser	
260 265 270	
gtt aag cta ttg att agt tgc tgg caa cga tct tgg ttt atc atg aga	864
Val Lys Leu Leu Ile Ser Cys Trp Gln Arg Ser Ser Phe Ile Met Arg	
275 280 285	
aac ttt tta aga tct atc gct atg cta aaa tct aaa aac ata gat ata	912
Asn Phe Leu Arg Ser Ile Ala Met Leu Lys Ser Lys Asn Ile Asp Ile	
290 295 300	
gaa gta aag cta ttt att gta cca gat gct gat cct ccc att ccg tat	960
Glu Val Lys Leu Phe Ile Val Pro Asp Ala Asp Pro Pro Ile Pro Tyr	
305 310 315 320	
tct agg gta aac cat gcc aaa tat atg gta acc gat aaa acg gcc tat	1008
Ser Arg Val Asn His Ala Lys Tyr Met Val Thr Asp Lys Thr Ala Tyr	
325 330 335	
ata ggt acc tca aat tgg aca gga aat tac ttt acg gat aca tgt gga	1056
Ile Gly Thr Ser Asn Trp Thr Gly Asn Tyr Phe Thr Asp Thr Cys Gly	
340 345 350	
gca tct att aat att aca ccg gat gat gga tta ggt ctt cgt caa caa	1104
Ala Ser Ile Asn Ile Thr Pro Asp Asp Gly Leu Gly Leu Arg Gln Gln	
355 360 365	
ttg gaa gat att ttt atg cgt gat tgg aat tca aaa tac agc tat gaa	1152
Leu Glu Asp Ile Phe Met Arg Asp Trp Asn Ser Lys Tyr Ser Tyr Glu	
370 375 380	
ttg tac gat act agt cct act aaa agg tgt aaa cta tta aaa aat atg	1200
Leu Tyr Asp Thr Ser Pro Thr Lys Arg Cys Lys Leu Leu Lys Asn Met	

385	390	395	400	
aaa caa tgt aca aat gat ata tac tgc gat gag ata caa ccg gaa aaa				1248
Lys Gln Cys Thr Asn Asp Ile Tyr Cys Asp Glu Ile Gln Pro Glu Lys				
	405	410	415	

gaa att cct gaa tat tct ctt gaa	1272
Glu Ile Pro Glu Tyr Ser Leu Glu	
	420

<210> 88
 <211> 424
 <212> PRT
 <213> vaccinia virus

<400> 88

Met Asn Pro Asp Asn Thr Ile Ala Val Ile Thr Glu Thr Ile Pro Ile	
1 5 10 15	
Gly Met Gln Phe Asp Lys Val Tyr Leu Ser Thr Phe Asn Met Trp Arg	
20 25 30	
Glu Ile Leu Ser Asn Thr Thr Lys Thr Leu Asp Ile Ser Ser Phe Tyr	
35 40 45	
Trp Ser Leu Ser Asp Glu Val Gly Thr Asn Phe Gly Thr Ile Ile Leu	
50 55 60	
Asn Glu Ile Val Gln Leu Pro Lys Arg Gly Val Arg Val Arg Val Ala	
65 70 75 80	
Val Asn Lys Ser Asn Lys Pro Leu Lys Asp Val Glu Arg Leu Gln Met	
85 90 95	
Ala Gly Val Glu Val Arg Tyr Ile Asp Ile Thr Asn Ile Leu Gly Gly	
100 105 110	
Val Leu His Thr Lys Phe Trp Ile Ser Asp Asn Thr His Ile Tyr Leu	
115 120 125	
Gly Ser Ala Asn Met Asp Trp Arg Ser Leu Thr Gln Val Lys Glu Leu	
130 135 140	
Gly Ile Ala Ile Phe Asn Asn Arg Asn Leu Ala Ala Asp Leu Thr Gln	
145 150 155 160	
Ile Phe Glu Val Tyr Trp Tyr Leu Gly Val Asn Asn Leu Pro Tyr Asn	
165 170 175	
Trp Lys Asn Phe Tyr Pro Ser Tyr Tyr Asn Thr Asp His Pro Leu Ser	
180 185 190	
Ile Asn Val Ser Gly Val Pro His Ser Val Phe Ile Ala Ser Ala Pro	
195 200 205	
Gln Gln Leu Cys Thr Met Glu Arg Thr Asn Asp Leu Thr Ala Leu Leu	
210 215 220	
Ser Cys Ile Arg Asn Ala Ser Lys Phe Val Tyr Val Ser Val Met Asn	
225 230 235 240	
Phe Ile Pro Ile Ile Tyr Ser Lys Ala Gly Lys Ile Leu Phe Trp Pro	
245 250 255	
Tyr Ile Glu Asp Glu Leu Arg Arg Ser Ala Ile Asp Arg Gln Val Ser	
260 265 270	
Val Lys Leu Leu Ile Ser Cys Trp Gln Arg Ser Ser Phe Ile Met Arg	
275 280 285	
Asn Phe Leu Arg Ser Ile Ala Met Leu Lys Ser Lys Asn Ile Asp Ile	
290 295 300	
Glu Val Lys Leu Phe Ile Val Pro Asp Ala Asp Pro Pro Ile Pro Tyr	
305 310 315 320	
Ser Arg Val Asn His Ala Lys Tyr Met Val Thr Asp Lys Thr Ala Tyr	
325 330 335	

Ile Gly Thr Ser Asn Trp Thr Gly Asn Tyr Phe Thr Asp Thr Cys Gly
 340 345 350
 Ala Ser Ile Asn Ile Thr Pro Asp Asp Gly Leu Gly Leu Arg Gln Gln
 355 360 365
 Leu Glu Asp Ile Phe Met Arg Asp Trp Asn Ser Lys Tyr Ser Tyr Glu
 370 375 380
 Leu Tyr Asp Thr Ser Pro Thr Lys Arg Cys Lys Leu Leu Lys Asn Met
 385 390 395 400
 Lys Gln Cys Thr Asn Asp Ile Tyr Cys Asp Glu Ile Gln Pro Glu Lys
 405 410 415
 Glu Ile Pro Glu Tyr Ser Leu Glu
 420

<210> 89
 <211> 411
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(411)

<400> 89
 atg gga gca aca att tct ata cta gcc tct tac gat aat cca aac ttg 48
 Met Gly Ala Thr Ile Ser Ile Leu Ala Ser Tyr Asp Asn Pro Asn Leu
 1 5 10 15

 ttt aca gca atg att cta atg tct cct cta gtt aat gca gat gct gtt 96
 Phe Thr Ala Met Ile Leu Met Ser Pro Leu Val Asn Ala Asp Ala Val
 20 25 30

 tca aaa ctg aat ctg cta gct gcc aaa ctt atg gga acc atc aca cca 144
 Ser Lys Leu Asn Leu Leu Ala Ala Lys Leu Met Gly Thr Ile Thr Pro
 35 40 45

 aat gcg cca gtc gga aag cta tgt cca gaa tca gta tct aga gat atg 192
 Asn Ala Pro Val Gly Lys Leu Cys Pro Glu Ser Val Ser Arg Asp Met
 50 55 60

 gat aaa gtt tat aaa tac caa tac gac cca tta atc aat cat gaa aaa 240
 Asp Lys Val Tyr Lys Tyr Gln Tyr Asp Pro Leu Ile Asn His Glu Lys
 65 70 75 80

 att aag gct gga ttt gct agt cag gtc ttg aag gct acc aac aag gtt 288
 Ile Lys Ala Gly Phe Ala Ser Gln Val Leu Lys Ala Thr Asn Lys Val
 85 90 95

 aga aaa ata att tcc aag att aac acc ccc cga ctc tca tac tcc agg 336
 Arg Lys Ile Ile Ser Lys Ile Asn Thr Pro Arg Leu Ser Tyr Ser Arg
 100 105 110

 gaa caa aca atg aga tta gtg atg ttt cag gtg cat att att tca tgc 384
 Glu Gln Thr Met Arg Leu Val Met Phe Gln Val His Ile Ile Ser Cys
 115 120 125

 aac atg caa att gta ata gag aaa taa 411
 Asn Met Gln Ile Val Ile Glu Lys *
 130 135

<210> 90
 <211> 136
 <212> PRT
 <213> vaccinia virus

<400> 90
 Met Gly Ala Thr Ile Ser Ile Leu Ala Ser Tyr Asp Asn Pro Asn Leu
 1 5 10 15
 Phe Thr Ala Met Ile Leu Met Ser Pro Leu Val Asn Ala Asp Ala Val
 20 25 30
 Ser Lys Leu Asn Leu Leu Ala Ala Lys Leu Met Gly Thr Ile Thr Pro
 35 40 45
 Asn Ala Pro Val Gly Lys Leu Cys Pro Glu Ser Val Ser Arg Asp Met
 50 55 60
 Asp Lys Val Tyr Lys Tyr Gln Tyr Asp Pro Leu Ile Asn His Glu Lys
 65 70 75 80
 Ile Lys Ala Gly Phe Ala Ser Gln Val Leu Lys Ala Thr Asn Lys Val
 85 90 95
 Arg Lys Ile Ile Ser Lys Ile Asn Thr Pro Arg Leu Ser Tyr Ser Arg
 100 105 110
 Glu Gln Thr Met Arg Leu Val Met Phe Gln Val His Ile Ile Ser Cys
 115 120 125
 Asn Met Gln Ile Val Ile Glu Lys
 130 135

<210> 91
 <211> 243
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(243)

<400> 91
 atg agt gca aac tgt atg ttc aat ctg gac aat gat tac ata tat tgg 48
 Met Ser Ala Asn Cys Met Phe Asn Leu Asp Asn Asp Tyr Ile Tyr Trp
 1 5 10 15
 aaa cct att aca tat cct aag gca tta gta ttc ata agt cat gga gct 96
 Lys Pro Ile Thr Tyr Pro Lys Ala Leu Val Phe Ile Ser His Gly Ala
 20 25 30
 ggt aaa cat tct gga cgt tat gac gaa cta gct gaa aac ata tca tcg 144
 Gly Lys His Ser Gly Arg Tyr Asp Glu Leu Ala Glu Asn Ile Ser Ser
 35 40 45
 tta gga att tta gta ttc tca cat gat cat att gga cat gga aga agt 192
 Leu Gly Ile Leu Val Phe Ser His Asp His Ile Gly His Gly Arg Ser
 50 55 60
 aat ggt gaa aaa atg atg att gat gac ttt ggt aca gca cgt ggt aac 240
 Asn Gly Glu Lys Met Met Ile Asp Asp Phe Gly Thr Ala Arg Gly Asn
 65 70 75 80
 tat 243

Tyr

<210> 92
<211> 81
<212> PRT
<213> vaccinia virus

<400> 92
Met Ser Ala Asn Cys Met Phe Asn Leu Asp Asn Asp Tyr Ile Tyr Trp
1 5 10 15
Lys Pro Ile Thr Tyr Pro Lys Ala Leu Val Phe Ile Ser His Gly Ala
20 25 30
Gly Lys His Ser Gly Arg Tyr Asp Glu Leu Ala Glu Asn Ile Ser Ser
35 40 45
Leu Gly Ile Leu Val Phe Ser His Asp His Ile Gly His Gly Arg Ser
50 55 60
Asn Gly Glu Lys Met Met Ile Asp Asp Phe Gly Thr Ala Arg Gly Asn
65 70 75 80
Tyr

<210> 93
<211> 450
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(450)

<400> 93
atg gcg act aaa tta gat tat gag gat gct gtt ttt tac ttt gtg gat 48
Met Ala Thr Lys Leu Asp Tyr Glu Asp Ala Val Phe Tyr Phe Val Asp
1 5 10 15
gat gat aaa ata tgt agt cgc gac tcc atc atc gat cta ata gat gaa 96
Asp Asp Lys Ile Cys Ser Arg Asp Ser Ile Ile Asp Leu Ile Asp Glu
20 25 30
tat att acg tgg aga aat cat gtt ata gtg ttt aac aaa gat att acc 144
Tyr Ile Thr Trp Arg Asn His Val Ile Val Phe Asn Lys Asp Ile Thr
35 40 45
agt tgt gga aga ctg tac aag gaa ttg atg aag ttc gat gat gtc gct 192
Ser Cys Gly Arg Leu Tyr Lys Glu Leu Met Lys Phe Asp Asp Val Ala
50 55 60
ata cgg tac tat ggt att gat aaa att aat gag att gtc gaa gct atg 240
Ile Arg Tyr Tyr Gly Ile Asp Lys Ile Asn Glu Ile Val Glu Ala Met
65 70 75 80
agc gaa gga gac cac tac atc aat ttt aca aaa gtc cat gat cag gaa 288
Ser Glu Gly Asp His Tyr Ile Asn Phe Thr Lys Val His Asp Gln Glu
85 90 95
agt cta ttc gct acc ata gga ata tgt gct aaa atc act gaa cat tgg 336

Ser Leu Phe Ala Thr Ile Gly Ile Cys Ala Lys Ile Thr Glu His Trp
100 105 110

gga tac aaa aag att tca gaa tct aga ttc caa tca ttg gga aac att 384
Gly Tyr Lys Lys Ile Ser Glu Ser Arg Phe Gln Ser Leu Gly Asn Ile
115 120 125

aca gat ctg atg acc gac gat aat ata aac atc ttg ata ctt ttt cta 432
Thr Asp Leu Met Thr Asp Asp Asn Ile Asn Ile Leu Ile Leu Phe Leu
130 135 140

gaa aaa aaa ttg aat tga 450
Glu Lys Lys Leu Asn *

<210> 94
<211> 149
<212> PRT
<213> vaccinia virus

<400> 94
Met Ala Thr Lys Leu Asp Tyr Glu Asp Ala Val Phe Tyr Phe Val Asp
1 5 10 15
Asp Asp Lys Ile Cys Ser Arg Asp Ser Ile Ile Asp Leu Ile Asp Glu
20 25 30
Tyr Ile Thr Trp Arg Asn His Val Ile Val Phe Asn Lys Asp Ile Thr
35 40 45
Ser Cys Gly Arg Leu Tyr Lys Glu Leu Met Lys Phe Asp Asp Val Ala
50 55 60
Ile Arg Tyr Tyr Gly Ile Asp Lys Ile Asn Glu Ile Val Glu Ala Met
65 70 75 80
Ser Glu Gly Asp His Tyr Ile Asn Phe Thr Lys Val His Asp Gln Glu
85 90 95
Ser Leu Phe Ala Thr Ile Gly Ile Cys Ala Lys Ile Thr Glu His Trp
100 105 110
Gly Tyr Lys Lys Ile Ser Glu Ser Arg Phe Gln Ser Leu Gly Asn Ile
115 120 125
Thr Asp Leu Met Thr Asp Asp Asn Ile Asn Ile Leu Ile Leu Phe Leu
130 135 140
Glu Lys Lys Leu Asn
145

<210> 95
<211> 678
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1) ... (678)

<400> 95
atg ttg tcg atg ttt atg tgt aat aat atc gta gat tat gta gat gat 48
Met Leu Ser Met Phe Met Cys Asn Asn Ile Val Asp Tyr Val Asp Asp
1 5 10 15

ata gat aat ggt ata gta cat gat ata gaa gat gag gct agc aat aat 96

Ile	Asp	Asn	Gly	Ile	Val	His	Asp	Ile	Glu	Asp	Glu	Ala	Ser	Asn	Asn		
			20					25					30				
gtt	gat	cac	gac	tat	gta	tat	cca	ctt	cca	gaa	aat	atg	gta	tat	aga	144	
Val	Asp	His	Asp	Tyr	Val	Tyr	Pro	Leu	Pro	Glu	Asn	Met	Val	Tyr	Arg		
		35					40				45						
ttt	gac	aag	tcc	act	aac	ata	ctc	gat	tat	cta	tca	acg	gaa	cgg	gac	192	
Phe	Asp	Lys	Ser	Thr	Asn	Ile	Leu	Asp	Tyr	Leu	Ser	Thr	Glu	Arg	Asp		
	50					55					60						
cat	gta	atg	atg	gct	gtt	cga	tac	tat	atg	agt	aaa	caa	cgt	tta	gac	240	
His	Val	Met	Met	Ala	Val	Arg	Tyr	Tyr	Met	Ser	Lys	Gln	Arg	Leu	Asp		
	65				70				75						80		
gac	ttg	tat	aga	cag	ttg	ccc	aca	aag	act	aga	tca	tat	ata	gat	att	288	
Asp	Leu	Tyr	Arg	Gln	Leu	Pro	Thr	Lys	Thr	Arg	Ser	Tyr	Ile	Asp	Ile		
				85					90						95		
atc	aac	ata	tat	tgt	gat	aaa	gtt	agt	aat	gat	tat	aat	agg	gac	atg	336	
Ile	Asn	Ile	Tyr	Cys	Asp	Lys	Val	Ser	Asn	Asp	Tyr	Asn	Arg	Asp	Met		
			100					105					110				
aat	atc	atg	tat	gat	atg	gca	tct	aca	aaa	tca	ttt	aca	gtt	tat	gac	384	
Asn	Ile	Met	Tyr	Asp	Met	Ala	Ser	Thr	Lys	Ser	Phe	Thr	Val	Tyr	Asp		
		115					120					125					
ata	aat	aac	gaa	gtt	aat	act	ata	cta	atg	gat	aac	aag	ggg	ttg	ggg	432	
Ile	Asn	Asn	Glu	Val	Asn	Thr	Ile	Leu	Met	Asp	Asn	Lys	Gly	Leu	Gly		
	130					135					140						
gta	aga	ttg	gcg	aca	att	tca	ttt	ata	acc	aaa	ttg	ggg	aga	cga	tgt	480	
Val	Arg	Leu	Ala	Thr	Ile	Ser	Phe	Ile	Thr	Lys	Leu	Gly	Arg	Arg	Cys		
	145				150					155					160		
atg	aat	cca	gta	aaa	act	ata	aaa	atg	ttt	act	cta	cta	tcg	cat	act	528	
Met	Asn	Pro	Val	Lys	Thr	Ile	Lys	Met	Phe	Thr	Leu	Leu	Ser	His	Thr		
				165					170					175			
ata	tgc	gat	gat	tgt	ttt	gta	gat	tat	ata	acg	gac	att	tca	cca	cca	576	
Ile	Cys	Asp	Asp	Cys	Phe	Val	Asp	Tyr	Ile	Thr	Asp	Ile	Ser	Pro	Pro		
			180					185					190				
gat	aat	acc	atc	cct	aac	act	agc	acg	cgt	gaa	tat	cta	aag	ctt	att	624	
Asp	Asn	Thr	Ile	Pro	Asn	Thr	Ser	Thr	Arg	Glu	Tyr	Leu	Lys	Leu	Ile		
		195					200					205					
ggc	atc	aca	gct	atc	atg	ttt	gct	aca	tat	aaa	act	ctc	aaa	tac	atg	672	
Gly	Ile	Thr	Ala	Ile	Met	Phe	Ala	Thr	Tyr	Lys	Thr	Leu	Lys	Tyr	Met		
	210					215					220						
ata	gga															678	
Ile	Gly																
225																	

<210> 96
 <211> 226
 <212> PRT

<213> vaccinia virus

<400> 96

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Met Leu Ser Met Phe Met Cys Asn Asn Ile Val Asp Tyr Val Asp Asp
 1           5           10           15
Ile Asp Asn Gly Ile Val His Asp Ile Glu Asp Glu Ala Ser Asn Asn
 20           25           30
Val Asp His Asp Tyr Val Tyr Pro Leu Pro Glu Asn Met Val Tyr Arg
 35           40           45
Phe Asp Lys Ser Thr Asn Ile Leu Asp Tyr Leu Ser Thr Glu Arg Asp
 50           55           60
His Val Met Met Ala Val Arg Tyr Tyr Met Ser Lys Gln Arg Leu Asp
 65           70           75           80
Asp Leu Tyr Arg Gln Leu Pro Thr Lys Thr Arg Ser Tyr Ile Asp Ile
 85           90           95
Ile Asn Ile Tyr Cys Asp Lys Val Ser Asn Asp Tyr Asn Arg Asp Met
100           105           110
Asn Ile Met Tyr Asp Met Ala Ser Thr Lys Ser Phe Thr Val Tyr Asp
115           120           125
Ile Asn Asn Glu Val Asn Thr Ile Leu Met Asp Asn Lys Gly Leu Gly
130           135           140
Val Arg Leu Ala Thr Ile Ser Phe Ile Thr Lys Leu Gly Arg Arg Cys
145           150           155           160
Met Asn Pro Val Lys Thr Ile Lys Met Phe Thr Leu Leu Ser His Thr
165           170           175
Ile Cys Asp Asp Cys Phe Val Asp Tyr Ile Thr Asp Ile Ser Pro Pro
180           185           190
Asp Asn Thr Ile Pro Asn Thr Ser Thr Arg Glu Tyr Leu Lys Leu Ile
195           200           205
Gly Ile Thr Ala Ile Met Phe Ala Thr Tyr Lys Thr Leu Lys Tyr Met
210           215           220
Ile Gly
225
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<210> 97

<211> 441

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(441)

<400> 97

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atg ttc aac atg aat att aac tca cca gtt aga ttt gtt aag gaa act 48
Met Phe Asn Met Asn Ile Asn Ser Pro Val Arg Phe Val Lys Glu Thr
 1           5           10           15

aac aga gct aaa tct cct act agg caa tcg ccg ggt gct gcc gga tat 96
Asn Arg Ala Lys Ser Pro Thr Arg Gln Ser Pro Gly Ala Ala Gly Tyr
 20           25           30

gat ttg tat agc gct tac gat tat act atc cct cca gga gaa aga cag 144
Asp Leu Tyr Ser Ala Tyr Asp Tyr Thr Ile Pro Pro Gly Glu Arg Gln
 35           40           45

tta att aag aca gat att agt atg tcc atg cct aag att tgc tat ggt 192
Leu Ile Lys Thr Asp Ile Ser Met Ser Met Pro Lys Ile Cys Tyr Gly
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50	55	60	
aga ata gct cct agg tct ggt ctg tca cta aaa ggc att gat ata gga			240
Arg Ile Ala Pro Arg Ser Gly Leu Ser Leu Lys Gly Ile Asp Ile Gly			
65	70	75	80
ggt ggt gta ata gac gaa gat tat agg gga aac ata gga gtc att ctt			288
Gly Gly Val Ile Asp Glu Asp Tyr Arg Gly Asn Ile Gly Val Ile Leu			
	85	90	95
att aat aat gga aaa tgt acg ttt aat gta aat act gga gat aga ata			336
Ile Asn Asn Gly Lys Cys Thr Phe Asn Val Asn Thr Gly Asp Arg Ile			
	100	105	110
gct cag cta atc tat caa cgt ata tat tat cca gaa ctg gaa gaa gta			384
Ala Gln Leu Ile Tyr Gln Arg Ile Tyr Tyr Pro Glu Leu Glu Glu Val			
	115	120	125
caa tct cta gat agt aca aat aga gga gat caa ggg ttt gga tca aca			432
Gln Ser Leu Asp Ser Thr Asn Arg Gly Asp Gln Gly Phe Gly Ser Thr			
	130	135	140
gga ctt aga			441
Gly Leu Arg			
145			

<210> 98
 <211> 147
 <212> PRT
 <213> vaccinia virus

<400> 98

Met Phe Asn Met Asn Ile Asn Ser Pro Val Arg Phe Val Lys Glu Thr			
1	5	10	15
Asn Arg Ala Lys Ser Pro Thr Arg Gln Ser Pro Gly Ala Ala Gly Tyr			
	20	25	30
Asp Leu Tyr Ser Ala Tyr Asp Tyr Thr Ile Pro Pro Gly Glu Arg Gln			
	35	40	45
Leu Ile Lys Thr Asp Ile Ser Met Ser Met Pro Lys Ile Cys Tyr Gly			
	50	55	60
Arg Ile Ala Pro Arg Ser Gly Leu Ser Leu Lys Gly Ile Asp Ile Gly			
	65	70	75
Gly Gly Val Ile Asp Glu Asp Tyr Arg Gly Asn Ile Gly Val Ile Leu			
	85	90	95
Ile Asn Asn Gly Lys Cys Thr Phe Asn Val Asn Thr Gly Asp Arg Ile			
	100	105	110
Ala Gln Leu Ile Tyr Gln Arg Ile Tyr Tyr Pro Glu Leu Glu Glu Val			
	115	120	125
Gln Ser Leu Asp Ser Thr Asn Arg Gly Asp Gln Gly Phe Gly Ser Thr			
	130	135	140
Gly Leu Arg			
145			

<210> 99
 <211> 1443
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1443)

<400> 99

atg	ccg	ata	ttt	ggt	aat	act	gtg	tac	tgt	aag	aat	ata	tta	gca	ttg	48
Met	Pro	Ile	Phe	Val	Asn	Thr	Val	Tyr	Cys	Lys	Asn	Ile	Leu	Ala	Leu	
1				5					10					15		
tct	atg	act	aag	aaa	ttc	aaa	aca	att	att	gat	gct	ata	ggg	ggc	aat	96
Ser	Met	Thr	Lys	Lys	Phe	Lys	Thr	Ile	Ile	Asp	Ala	Ile	Gly	Gly	Asn	
			20					25					30			
ata	ata	gtc	aat	tct	acg	ata	ttg	aaa	aag	tta	tct	cct	tac	ttt	cgc	144
Ile	Ile	Val	Asn	Ser	Thr	Ile	Leu	Lys	Lys	Leu	Ser	Pro	Tyr	Phe	Arg	
		35					40					45				
aca	cat	tta	cgt	caa	aaa	tac	acg	aaa	aat	aaa	gat	cca	ggt	acg	agg	192
Thr	His	Leu	Arg	Gln	Lys	Tyr	Thr	Lys	Asn	Lys	Asp	Pro	Val	Thr	Arg	
	50					55					60					
gtt	tgt	cta	gac	ctt	gac	att	cac	agt	tta	act	tct	ata	ggt	att	tac	240
Val	Cys	Leu	Asp	Leu	Asp	Ile	His	Ser	Leu	Thr	Ser	Ile	Val	Ile	Tyr	
65				70					75					80		
tcg	tat	act	gga	aag	gta	tat	ata	gat	agt	cat	aac	gtc	gtc	aat	tta	288
Ser	Tyr	Thr	Gly	Lys	Val	Tyr	Ile	Asp	Ser	His	Asn	Val	Val	Asn	Leu	
			85					90						95		
tta	cgt	gct	tct	ata	tta	acc	tct	gta	gaa	ttt	atc	atc	tac	act	tgt	336
Leu	Arg	Ala	Ser	Ile	Leu	Thr	Ser	Val	Glu	Phe	Ile	Ile	Tyr	Thr	Cys	
			100					105					110			
ata	aac	ttt	atc	tta	cga	gat	ttt	aga	aag	gaa	tat	tgt	gtc	gag	tgt	384
Ile	Asn	Phe	Ile	Leu	Arg	Asp	Phe	Arg	Lys	Glu	Tyr	Cys	Val	Glu	Cys	
		115					120					125				
tac	atg	atg	ggg	ata	gaa	tac	gga	cta	tcc	aat	ctc	tta	tgt	cat	act	432
Tyr	Met	Met	Gly	Ile	Glu	Tyr	Gly	Leu	Ser	Asn	Leu	Leu	Cys	His	Thr	
	130					135					140					
aaa	aac	ttt	att	gcc	aaa	cac	ttt	ttg	gaa	ctg	gaa	gat	gac	atc	ata	480
Lys	Asn	Phe	Ile	Ala	Lys	His	Phe	Leu	Glu	Leu	Glu	Asp	Asp	Ile	Ile	
145					150				155					160		
gac	aat	ttt	gat	tat	cta	tct	atg	aaa	ctt	att	cta	gaa	agc	gat	gaa	528
Asp	Asn	Phe	Asp	Tyr	Leu	Ser	Met	Lys	Leu	Ile	Leu	Glu	Ser	Asp	Glu	
				165				170						175		
cta	aat	ggt	cca	gat	gag	gat	tat	gta	ggt	gat	ttt	gtc	att	aag	tgg	576
Leu	Asn	Val	Pro	Asp	Glu	Asp	Tyr	Val	Val	Asp	Phe	Val	Ile	Lys	Trp	
			180					185					190			
tat	ata	aag	cga	aga	aat	aga	tta	gga	aat	ctg	cta	ctc	ctt	atc	aaa	624
Tyr	Ile	Lys	Arg	Arg	Asn	Arg	Leu	Gly	Asn	Leu	Leu	Leu	Leu	Ile	Lys	
		195					200					205				
aat	gta	atc	agg	tca	aat	tat	ctt	tct	ccc	aga	ggg	ata	aat	aat	gta	672
Asn	Val	Ile	Arg	Ser	Asn	Tyr	Leu	Ser	Pro	Arg	Gly	Ile	Asn	Asn	Val	

210	215	220	
aaa tgg ata cta gac tgt acc aaa ata ttt cat tgt gat aaa caa cca			720
Lys Trp Ile Leu Asp Cys Thr Lys Ile Phe His Cys Asp Lys Gln Pro			
225	230	235	240
cgc aaa tca tac aag tat cca ttc ata gag tat cct atg aac atg gat			768
Arg Lys Ser Tyr Lys Tyr Pro Phe Ile Glu Tyr Pro Met Asn Met Asp			
	245	250	255
caa att ata gat ata ttc cat atg tgt aca agt act cat gtt gga gaa			816
Gln Ile Ile Asp Ile Phe His Met Cys Thr Ser Thr His Val Gly Glu			
	260	265	270
gta gta tat ctc atc ggt gga tgg atg aac aat gaa ata cat aac aat			864
Val Val Tyr Leu Ile Gly Gly Trp Met Asn Asn Glu Ile His Asn Asn			
	275	280	285
gct ata gct gta aat tat ata tca aac aat tgg att cca att cct ccg			912
Ala Ile Ala Val Asn Tyr Ile Ser Asn Asn Trp Ile Pro Ile Pro Pro			
	290	295	300
atg aat agc ccc aga ctg tat gct agc ggg ata ccc gct aac aat aaa			960
Met Asn Ser Pro Arg Leu Tyr Ala Ser Gly Ile Pro Ala Asn Asn Lys			
	305	310	320
tta tac gta gta gga ggt cta cca aat ccc aca tct gtt gag cgt tgg			1008
Leu Tyr Val Val Gly Gly Leu Pro Asn Pro Thr Ser Val Glu Arg Trp			
	325	330	335
ttc cac ggg gat gct gct tgg gtt aat atg ccg agt ctt ctg aaa cct			1056
Phe His Gly Asp Ala Ala Trp Val Asn Met Pro Ser Leu Leu Lys Pro			
	340	345	350
aga tgt aat cca gca gtg gca tcc ata aac aat gtt ata tac gta atg			1104
Arg Cys Asn Pro Ala Val Ala Ser Ile Asn Asn Val Ile Tyr Val Met			
	355	360	365
gga gga cat tct gaa act gat aca act aca gaa tat ttg cta ccc aat			1152
Gly Gly His Ser Glu Thr Asp Thr Thr Thr Glu Tyr Leu Leu Pro Asn			
	370	375	380
cat gat cag tgg cag ttt gga cca tcc act tat tat cct cat tat aaa			1200
His Asp Gln Trp Gln Phe Gly Pro Ser Thr Tyr Tyr Pro His Tyr Lys			
	385	390	400
tca tgc gcg tta gtg ttc ggt aga agg tta ttc ttg gtt ggt aga aat			1248
Ser Cys Ala Leu Val Phe Gly Arg Arg Leu Phe Leu Val Gly Arg Asn			
	405	410	415
gcg gaa ttt tat tgt gaa tcc agc aat aca tgg act ctg ata gat gat			1296
Ala Glu Phe Tyr Cys Glu Ser Ser Asn Thr Trp Thr Leu Ile Asp Asp			
	420	425	430
cct att tat ccg agg gat aat cca gaa ttg atc ata gtg gat aat aaa			1344
Pro Ile Tyr Pro Arg Asp Asn Pro Glu Leu Ile Ile Val Asp Asn Lys			
	435	440	445
ctg cta ttg ata gga gga ttt tat cgt gaa tcg tat ata gat act ata			1392

Leu	Leu	Leu	Ile	Gly	Gly	Phe	Tyr	Arg	Glu	Ser	Tyr	Ile	Asp	Thr	Ile			
450						455					460							
gaa	gtg	tac	aat	cat	cac	act	tat	tca	tgg	aat	ata	tgg	gat	ggg	aaa	1440		
Glu	Val	Tyr	Asn	His	His	Thr	Tyr	Ser	Trp	Asn	Ile	Trp	Asp	Gly	Lys			
465					470					475					480			
taa																1443		
*																		

<210> 100
 <211> 480
 <212> PRT
 <213> vaccinia virus

<400> 100

Met	Pro	Ile	Phe	Val	Asn	Thr	Val	Tyr	Cys	Lys	Asn	Ile	Leu	Ala	Leu		
1				5					10					15			
Ser	Met	Thr	Lys	Lys	Phe	Lys	Thr	Ile	Ile	Asp	Ala	Ile	Gly	Gly	Asn		
			20					25					30				
Ile	Ile	Val	Asn	Ser	Thr	Ile	Leu	Lys	Lys	Leu	Ser	Pro	Tyr	Phe	Arg		
		35					40					45					
Thr	His	Leu	Arg	Gln	Lys	Tyr	Thr	Lys	Asn	Lys	Asp	Pro	Val	Thr	Arg		
50						55					60						
Val	Cys	Leu	Asp	Leu	Asp	Ile	His	Ser	Leu	Thr	Ser	Ile	Val	Ile	Tyr		
65					70					75					80		
Ser	Tyr	Thr	Gly	Lys	Val	Tyr	Ile	Asp	Ser	His	Asn	Val	Val	Asn	Leu		
				85					90					95			
Leu	Arg	Ala	Ser	Ile	Leu	Thr	Ser	Val	Glu	Phe	Ile	Ile	Tyr	Thr	Cys		
			100					105					110				
Ile	Asn	Phe	Ile	Leu	Arg	Asp	Phe	Arg	Lys	Glu	Tyr	Cys	Val	Glu	Cys		
		115					120					125					
Tyr	Met	Met	Gly	Ile	Glu	Tyr	Gly	Leu	Ser	Asn	Leu	Leu	Cys	His	Thr		
130						135					140						
Lys	Asn	Phe	Ile	Ala	Lys	His	Phe	Leu	Glu	Leu	Glu	Asp	Asp	Ile	Ile		
145					150					155					160		
Asp	Asn	Phe	Asp	Tyr	Leu	Ser	Met	Lys	Leu	Ile	Leu	Glu	Ser	Asp	Glu		
				165					170					175			
Leu	Asn	Val	Pro	Asp	Glu	Asp	Tyr	Val	Val	Asp	Phe	Val	Ile	Lys	Trp		
			180					185					190				
Tyr	Ile	Lys	Arg	Arg	Asn	Arg	Leu	Gly	Asn	Leu	Leu	Leu	Leu	Ile	Lys		
		195					200						205				
Asn	Val	Ile	Arg	Ser	Asn	Tyr	Leu	Ser	Pro	Arg	Gly	Ile	Asn	Asn	Val		
		210				215					220						
Lys	Trp	Ile	Leu	Asp	Cys	Thr	Lys	Ile	Phe	His	Cys	Asp	Lys	Gln	Pro		
225					230					235					240		
Arg	Lys	Ser	Tyr	Lys	Tyr	Pro	Phe	Ile	Glu	Tyr	Pro	Met	Asn	Met	Asp		
				245					250					255			
Gln	Ile	Ile	Asp	Ile	Phe	His	Met	Cys	Thr	Ser	Thr	His	Val	Gly	Glu		
			260					265					270				
Val	Val	Tyr	Leu	Ile	Gly	Gly	Trp	Met	Asn	Asn	Glu	Ile	His	Asn	Asn		
		275					280					285					
Ala	Ile	Ala	Val	Asn	Tyr	Ile	Ser	Asn	Asn	Trp	Ile	Pro	Ile	Pro	Pro		
		290				295					300						
Met	Asn	Ser	Pro	Arg	Leu	Tyr	Ala	Ser	Gly	Ile	Pro	Ala	Asn	Asn	Lys		
305					310					315					320		
Leu	Tyr	Val	Val	Gly	Gly	Leu	Pro	Asn	Pro	Thr	Ser	Val	Glu	Arg	Trp		

				325					330					335			
Phe	His	Gly	Asp	Ala	Ala	Trp	Val	Asn	Met	Pro	Ser	Leu	Leu	Lys	Pro		
			340					345					350				
Arg	Cys	Asn	Pro	Ala	Val	Ala	Ser	Ile	Asn	Asn	Val	Ile	Tyr	Val	Met		
		355					360					365					
Gly	Gly	His	Ser	Glu	Thr	Asp	Thr	Thr	Thr	Glu	Tyr	Leu	Leu	Pro	Asn		
	370					375					380						
His	Asp	Gln	Trp	Gln	Phe	Gly	Pro	Ser	Thr	Tyr	Tyr	Pro	His	Tyr	Lys		
385					390					395					400		
Ser	Cys	Ala	Leu	Val	Phe	Gly	Arg	Arg	Leu	Phe	Leu	Val	Gly	Arg	Asn		
		405							410				415				
Ala	Glu	Phe	Tyr	Cys	Glu	Ser	Ser	Asn	Thr	Trp	Thr	Leu	Ile	Asp	Asp		
		420						425					430				
Pro	Ile	Tyr	Pro	Arg	Asp	Asn	Pro	Glu	Leu	Ile	Ile	Val	Asp	Asn	Lys		
	435					440						445					
Leu	Leu	Leu	Ile	Gly	Gly	Phe	Tyr	Arg	Glu	Ser	Tyr	Ile	Asp	Thr	Ile		
	450					455					460						
Glu	Val	Tyr	Asn	His	His	Thr	Tyr	Ser	Trp	Asn	Ile	Trp	Asp	Gly	Lys		
465					470					475					480		

<210> 101
 <211> 957
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(957)

<400> 101																	
atg	gaa	ccc	atc	cit	gca	cca	aat	cca	aat	aga	ttt	gtt	att	ttc	cca	48	
Met	Glu	Pro	Ile	Leu	Ala	Pro	Asn	Pro	Asn	Arg	Phe	Val	Ile	Phe	Pro		
1				5				10					15				
atc	caa	tat	tat	gac	atc	tgg	aac	atg	tat	aaa	aag	gca	gag	gca	tca	96	
Ile	Gln	Tyr	Tyr	Asp	Ile	Trp	Asn	Met	Tyr	Lys	Lys	Ala	Glu	Ala	Ser		
			20					25					30				
ttt	tgg	aca	gtg	gaa	gaa	gta	gat	ata	tct	aaa	gat	atc	aat	gat	tgg	144	
Phe	Trp	Thr	Val	Glu	Glu	Val	Asp	Ile	Ser	Lys	Asp	Ile	Asn	Asp	Trp		
			35				40					45					
aat	aaa	cta	aca	cca	gac	gaa	aaa	tat	ttt	ata	aaa	cat	gta	ttg	gcg	192	
Asn	Lys	Leu	Thr	Pro	Asp	Glu	Lys	Tyr	Phe	Ile	Lys	His	Val	Leu	Ala		
	50					55					60						
ttt	ttt	gca	gcc	agt	gac	gga	ata	gtg	aat	gaa	aat	ttg	gcg	gaa	cga	240	
Phe	Phe	Ala	Ala	Ser	Asp	Gly	Ile	Val	Asn	Glu	Asn	Leu	Ala	Glu	Arg		
65					70					75				80			
ttt	tgt	aca	gaa	gta	cag	att	acc	gag	gct	aga	tgt	ttc	tac	gga	ttt	288	
Phe	Cys	Thr	Glu	Val	Gln	Ile	Thr	Glu	Ala	Arg	Cys	Phe	Tyr	Gly	Phe		
				85					90					95			
cag	atg	gcc	att	gaa	aac	att	cat	tcg	gaa	atg	tat	agt	ctt	ttg	atc	336	
Gln	Met	Ala	Ile	Glu	Asn	Ile	His	Ser	Glu	Met	Tyr	Ser	Leu	Leu	Ile		
			100					105					110				

gat act tat gtt aaa gat agt aat gaa aaa aac tat ctc ttt aat gcc	384
Asp Thr Tyr Val Lys Asp Ser Asn Glu Lys Asn Tyr Leu Phe Asn Ala	
115 120 125	
ata gaa acg atg cct tgt gta aaa aag aag gcc gat tgg gct caa aag	432
Ile Glu Thr Met Pro Cys Val Lys Lys Lys Ala Asp Trp Ala Gln Lys	
130 135 140	
tgg ata cat gac agc gcc ggt tat gga gag aga ctt att gcc ttt gct	480
Trp Ile His Asp Ser Ala Gly Tyr Gly Glu Arg Leu Ile Ala Phe Ala	
145 150 155 160	
gca gta gaa gga atc ttc ttt tcc gga tca ttc gct tcc ata ttt tgg	528
Ala Val Glu Gly Ile Phe Phe Ser Gly Ser Phe Ala Ser Ile Phe Trp	
165 170 175	
ctt aaa aag cgt ggc cta atg ccc gga ctc acg ttt tcc aac gaa cta	576
Leu Lys Lys Arg Gly Leu Met Pro Gly Leu Thr Phe Ser Asn Glu Leu	
180 185 190	
att agt aga gac gag ggt ctg cac tgc gat ttc gca tgt ttg atg ttt	624
Ile Ser Arg Asp Glu Gly Leu His Cys Asp Phe Ala Cys Leu Met Phe	
195 200 205	
aaa cat tta ttg tat cca ccg agt gaa gaa acc gtt aga tat att ata	672
Lys His Leu Leu Tyr Pro Pro Ser Glu Glu Thr Val Arg Tyr Ile Ile	
210 215 220	
aca gat gca gta tcc att gaa caa gaa ttt ctt act gcg gct ctt cca	720
Thr Asp Ala Val Ser Ile Glu Gln Glu Phe Leu Thr Ala Ala Leu Pro	
225 230 235 240	
gtt aaa ctt ata gga atg aat tgt gaa atg atg aaa aca tat ata gaa	768
Val Lys Leu Ile Gly Met Asn Cys Glu Met Met Lys Thr Tyr Ile Glu	
245 250 255	
ttc gtc gcg gat aga ttg att tct gaa ttg gga ttt aaa aaa att tat	816
Phe Val Ala Asp Arg Leu Ile Ser Glu Leu Gly Phe Lys Lys Ile Tyr	
260 265 270	
aat gtt acc aat ccg ttt gat ttc atg gaa aat ata tca ttg gaa gga	864
Asn Val Thr Asn Pro Phe Asp Phe Met Glu Asn Ile Ser Leu Glu Gly	
275 280 285	
aaa act aat ttt ttc gaa aaa cgt gtg ggt gaa tac caa aaa atg gga	912
Lys Thr Asn Phe Phe Glu Lys Arg Val Gly Glu Tyr Gln Lys Met Gly	
290 295 300	
gtt atg tct caa aaa gat aat cat ttt tct cta gat gtt gac ttt	957
Val Met Ser Gln Lys Asp Asn His Phe Ser Leu Asp Val Asp Phe	
305 310 315	

<210> 102
 <211> 319
 <212> PRT
 <213> vaccinia virus

<400> 102
Met Glu Pro Ile Leu Ala Pro Asn Pro Asn Arg Phe Val Ile Phe Pro
1 5 10 15
Ile Gln Tyr Tyr Asp Ile Trp Asn Met Tyr Lys Lys Ala Glu Ala Ser
20 25 30
Phe Trp Thr Val Glu Glu Val Asp Ile Ser Lys Asp Ile Asn Asp Trp
35 40 45
Asn Lys Leu Thr Pro Asp Glu Lys Tyr Phe Ile Lys His Val Leu Ala
50 55 60
Phe Phe Ala Ala Ser Asp Gly Ile Val Asn Glu Asn Leu Ala Glu Arg
65 70 75 80
Phe Cys Thr Glu Val Gln Ile Thr Glu Ala Arg Cys Phe Tyr Gly Phe
85 90 95
Gln Met Ala Ile Glu Asn Ile His Ser Glu Met Tyr Ser Leu Leu Ile
100 105 110
Asp Thr Tyr Val Lys Asp Ser Asn Glu Lys Asn Tyr Leu Phe Asn Ala
115 120 125
Ile Glu Thr Met Pro Cys Val Lys Lys Lys Ala Asp Trp Ala Gln Lys
130 135 140
Trp Ile His Asp Ser Ala Gly Tyr Gly Glu Arg Leu Ile Ala Phe Ala
145 150 155 160
Ala Val Glu Gly Ile Phe Phe Ser Gly Ser Phe Ala Ser Ile Phe Trp
165 170 175
Leu Lys Lys Arg Gly Leu Met Pro Gly Leu Thr Phe Ser Asn Glu Leu
180 185 190
Ile Ser Arg Asp Glu Gly Leu His Cys Asp Phe Ala Cys Leu Met Phe
195 200 205
Lys His Leu Leu Tyr Pro Pro Ser Glu Glu Thr Val Arg Tyr Ile Ile
210 215 220
Thr Asp Ala Val Ser Ile Glu Gln Glu Phe Leu Thr Ala Ala Leu Pro
225 230 235 240
Val Lys Leu Ile Gly Met Asn Cys Glu Met Met Lys Thr Tyr Ile Glu
245 250 255
Phe Val Ala Asp Arg Leu Ile Ser Glu Leu Gly Phe Lys Lys Ile Tyr
260 265 270
Asn Val Thr Asn Pro Phe Asp Phe Met Glu Asn Ile Ser Leu Glu Gly
275 280 285
Lys Thr Asn Phe Phe Glu Lys Arg Val Gly Glu Tyr Gln Lys Met Gly
290 295 300
Val Met Ser Gln Lys Asp Asn His Phe Ser Leu Asp Val Asp Phe
305 310 315

<210> 103
<211> 963
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(963)

<400> 103
atg ggt acg aac ggc gtt aga gta ttt gtc att tta tat ttg ttg gct 48
Met Gly Thr Asn Gly Val Arg Val Phe Val Ile Leu Tyr Leu Leu Ala
1 5 10 15
gta tgc gga tgt atc gaa tac gac gta gac gat aat gta cat att tgt 96
Val Cys Gly Cys Ile Glu Tyr Asp Val Asp Asp Asn Val His Ile Cys

20					25					30						
acc	cac	act	aac	gtg	tca	cat	att	aat	cac	act	agt	tgg	tat	tat	aat	144
Thr	His	Thr	Asn	Val	Ser	His	Ile	Asn	His	Thr	Ser	Trp	Tyr	Tyr	Asn	
		35					40					45				
gat	aag	gtt	ata	gcg	cta	gcc	acc	gag	gat	aaa	act	tct	ggt	tat	ata	192
Asp	Lys	Val	Ile	Ala	Leu	Ala	Thr	Glu	Asp	Lys	Thr	Ser	Gly	Tyr	Ile	
	50					55					60					
tca	tca	ttc	ata	aaa	cgc	gtt	aat	atc	tca	tta	act	tgt	tta	aat	ata	240
Ser	Ser	Phe	Ile	Lys	Arg	Val	Asn	Ile	Ser	Leu	Thr	Cys	Leu	Asn	Ile	
	65				70					75					80	
tcg	agt	ttg	agg	tac	gaa	gat	tct	ggt	aca	tac	aaa	gga	gta	tcg	cat	288
Ser	Ser	Leu	Arg	Tyr	Glu	Asp	Ser	Gly	Thr	Tyr	Lys	Gly	Val	Ser	His	
				85					90					95		
cta	aaa	gat	gga	gtc	atc	gtt	acg	act	act	atg	aat	ata	tct	gta	aag	336
Leu	Lys	Asp	Gly	Val	Ile	Val	Thr	Thr	Thr	Met	Asn	Ile	Ser	Val	Lys	
			100					105					110			
gct	aat	atc	att	gac	ttg	act	ggt	aga	gtg	cgt	tat	cta	acc	aga	aat	384
Ala	Asn	Ile	Ile	Asp	Leu	Thr	Gly	Arg	Val	Arg	Tyr	Leu	Thr	Arg	Asn	
		115					120					125				
tat	tgc	gaa	gtt	aaa	ata	cga	tgc	gaa	ata	aca	tct	ttc	gcg	ctt	aat	432
Tyr	Cys	Glu	Val	Lys	Ile	Arg	Cys	Glu	Ile	Thr	Ser	Phe	Ala	Leu	Asn	
	130					135					140					
ggt	tct	act	aca	cca	cca	cat	atg	ata	tta	gga	aca	gta	gat	aaa	tgg	480
Gly	Ser	Thr	Thr	Pro	Pro	His	Met	Ile	Leu	Gly	Thr	Val	Asp	Lys	Trp	
	145				150					155					160	
aaa	tat	ctt	cca	ttt	cct	aca	gat	gat	tat	aga	tac	gta	ggg	gaa	ctg	528
Lys	Tyr	Leu	Pro	Phe	Pro	Thr	Asp	Asp	Tyr	Arg	Tyr	Val	Gly	Glu	Leu	
				165					170					175		
aaa	aga	tat	ata	tct	gga	aac	cca	tat	cca	aca	gag	tcg	cta	gcg	tta	576
Lys	Arg	Tyr	Ile	Ser	Gly	Asn	Pro	Tyr	Pro	Thr	Glu	Ser	Leu	Ala	Leu	
			180					185					190			
gaa	att	agc	tcg	acg	ttt	aat	cgg	ttt	act	atc	gtt	aaa	aat	ttg	aac	624
Glu	Ile	Ser	Ser	Thr	Phe	Asn	Arg	Phe	Thr	Ile	Val	Lys	Asn	Leu	Asn	
		195					200					205				
gat	gac	gag	ttt	tct	tgt	tat	ctg	ttt	tca	caa	aat	tat	agt	ttc	cat	672
Asp	Asp	Glu	Phe	Ser	Cys	Tyr	Leu	Phe	Ser	Gln	Asn	Tyr	Ser	Phe	His	
		210				215					220					
aaa	atg	ttg	aat	gtg	cgt	aac	att	tgt	gaa	tcc	aaa	tgg	aag	gcg	tta	720
Lys	Met	Leu	Asn	Val	Arg	Asn	Ile	Cys	Glu	Ser	Lys	Trp	Lys	Ala	Leu	
	225				230					235					240	
aat	aat	aat	gat	aat	gca	tcc	tcc	atg	ccc	gct	tcc	cac	aac	aat	ctc	768
Asn	Asn	Asn	Asp	Asn	Ala	Ser	Ser	Met	Pro	Ala	Ser	His	Asn	Asn	Leu	
				245					250					255		
gca	aac	gat	tta	ttt	agt	atg	atg	tca	caa	tta	caa	aat	gat	aat	gat	816

Ala	Asn	Asp	Leu	Phe	Ser	Met	Met	Ser	Gln	Leu	Gln	Asn	Asp	Asn	Asp		
			260					265					270				
gat	aat	aac	gat	tat	tca	gca	ccc	atg	aat	gtc	gat	aat	tta	att	atg	864	
Asp	Asn	Asn	Asp	Tyr	Ser	Ala	Pro	Met	Asn	Val	Asp	Asn	Leu	Ile	Met		
		275					280				285						
ata	gta	cta	ata	aca	atg	cta	tca	ata	ata	ctt	gta	att	att	gta	gtg	912	
Ile	Val	Leu	Ile	Thr	Met	Leu	Ser	Ile	Ile	Leu	Val	Ile	Ile	Val	Val		
	290					295					300						
att	gcg	gcg	ata	tcg	atg	tac	aaa	aaa	tcc	aag	tac	agg	cat	ata	gat	960	
Ile	Ala	Ala	Ile	Ser	Met	Tyr	Lys	Lys	Ser	Lys	Tyr	Arg	His	Ile	Asp		
305					310					315					320		
aac																963	
Asn																	

<210> 104
 <211> 321
 <212> PRT
 <213> vaccinia virus

<400> 104

Met	Gly	Thr	Asn	Gly	Val	Arg	Val	Phe	Val	Ile	Leu	Tyr	Leu	Leu	Ala		
1				5				10						15			
Val	Cys	Gly	Cys	Ile	Glu	Tyr	Asp	Val	Asp	Asp	Asn	Val	His	Ile	Cys		
		20						25					30				
Thr	His	Thr	Asn	Val	Ser	His	Ile	Asn	His	Thr	Ser	Trp	Tyr	Tyr	Asn		
		35					40					45					
Asp	Lys	Val	Ile	Ala	Leu	Ala	Thr	Glu	Asp	Lys	Thr	Ser	Gly	Tyr	Ile		
	50					55					60						
Ser	Ser	Phe	Ile	Lys	Arg	Val	Asn	Ile	Ser	Leu	Thr	Cys	Leu	Asn	Ile		
65				70						75				80			
Ser	Ser	Leu	Arg	Tyr	Glu	Asp	Ser	Gly	Thr	Tyr	Lys	Gly	Val	Ser	His		
			85					90					95				
Leu	Lys	Asp	Gly	Val	Ile	Val	Thr	Thr	Thr	Met	Asn	Ile	Ser	Val	Lys		
		100						105					110				
Ala	Asn	Ile	Asp	Leu	Thr	Gly	Arg	Val	Arg	Tyr	Leu	Thr	Arg	Asn			
		115				120					125						
Tyr	Cys	Glu	Val	Lys	Ile	Arg	Cys	Glu	Ile	Thr	Ser	Phe	Ala	Leu	Asn		
	130					135					140						
Gly	Ser	Thr	Thr	Pro	Pro	His	Met	Ile	Leu	Gly	Thr	Val	Asp	Lys	Trp		
145				150					155					160			
Lys	Tyr	Leu	Pro	Phe	Pro	Thr	Asp	Asp	Tyr	Arg	Tyr	Val	Gly	Glu	Leu		
			165					170						175			
Lys	Arg	Tyr	Ile	Ser	Gly	Asn	Pro	Tyr	Pro	Thr	Glu	Ser	Leu	Ala	Leu		
		180						185					190				
Glu	Ile	Ser	Ser	Thr	Phe	Asn	Arg	Phe	Thr	Ile	Val	Lys	Asn	Leu	Asn		
		195				200						205					
Asp	Asp	Glu	Phe	Ser	Cys	Tyr	Leu	Phe	Ser	Gln	Asn	Tyr	Ser	Phe	His		
	210					215					220						
Lys	Met	Leu	Asn	Val	Arg	Asn	Ile	Cys	Glu	Ser	Lys	Trp	Lys	Ala	Leu		
225				230					235					240			
Asn	Asn	Asn	Asp	Asn	Ala	Ser	Ser	Met	Pro	Ala	Ser	His	Asn	Asn	Leu		
			245						250					255			
Ala	Asn	Asp	Leu	Phe	Ser	Met	Met	Ser	Gln	Leu	Gln	Asn	Asp	Asn	Asp		

<210> 107
 <211> 240
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(240)

<400> 107
 atg acg ctc gtc atg gga tcc tgc tgt ggt aga ttc tgt gac gct aag 48
 Met Thr Leu Val Met Gly Ser Cys Cys Gly Arg Phe Cys Asp Ala Lys
 1 5 10 15
 aat aag aat aag aag gaa gat gta gaa gag gga aga gaa gga tgt tac 96
 Asn Lys Asn Lys Lys Glu Asp Val Glu Gly Arg Glu Gly Cys Tyr
 20 25 30
 aat tat aag aac ctt aat gat ctg gat gaa tcc gaa gca cgt gta gaa 144
 Asn Tyr Lys Asn Leu Asn Asp Leu Asp Glu Ser Glu Ala Arg Val Glu
 35 40 45
 ttt gga cca tta tat atg ata aat gaa gaa aaa tca gac ata aat aca 192
 Phe Gly Pro Leu Tyr Met Ile Asn Glu Glu Lys Ser Asp Ile Asn Thr
 50 55 60
 ttg gat ata aaa aga aga tat aga cac acg ata gag tct gta tat ttc 240
 Leu Asp Ile Lys Arg Arg Tyr Arg His Thr Ile Glu Ser Val Tyr Phe
 65 70 75 80

<210> 108
 <211> 80
 <212> PRT
 <213> vaccinia virus

<400> 108
 Met Thr Leu Val Met Gly Ser Cys Cys Gly Arg Phe Cys Asp Ala Lys
 1 5 10 15
 Asn Lys Asn Lys Lys Glu Asp Val Glu Gly Arg Glu Gly Cys Tyr
 20 25 30
 Asn Tyr Lys Asn Leu Asn Asp Leu Asp Glu Ser Glu Ala Arg Val Glu
 35 40 45
 Phe Gly Pro Leu Tyr Met Ile Asn Glu Glu Lys Ser Asp Ile Asn Thr
 50 55 60
 Leu Asp Ile Lys Arg Arg Tyr Arg His Thr Ile Glu Ser Val Tyr Phe
 65 70 75 80

<210> 109
 <211> 195
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(195)

<400> 109
atg gag gga tct aaa cgc aga cac gac agt cgg cga cca caa caa gaa 48
Met Glu Gly Ser Lys Arg Arg His Asp Ser Arg Arg Pro Gln Gln Glu
1 5 10 15
cag gag cag cct cgt cca cgt aca ccg cca tca tat gaa gaa att gca 96
Gln Glu Gln Pro Arg Pro Arg Thr Pro Pro Ser Tyr Glu Glu Ile Ala
20 25 30
aaa tat gga cac tca ttt aac gtg aaa aga ttt acg aat aaa gaa atg 144
Lys Tyr Gly His Ser Phe Asn Val Lys Arg Phe Thr Asn Lys Glu Met
35 40 45
tgt ctt aaa aat gat tat cca cga att ata tca tat aat cct cca cca 192
Cys Leu Lys Asn Asp Tyr Pro Arg Ile Ile Ser Tyr Asn Pro Pro Pro
50 55 60
aaa 195
Lys
65

<210> 110
<211> 65
<212> PRT
<213> vaccinia virus

<400> 110
Met Glu Gly Ser Lys Arg Arg His Asp Ser Arg Arg Pro Gln Gln Glu
1 5 10 15
Gln Glu Gln Pro Arg Pro Arg Thr Pro Pro Ser Tyr Glu Glu Ile Ala
20 25 30
Lys Tyr Gly His Ser Phe Asn Val Lys Arg Phe Thr Asn Lys Glu Met
35 40 45
Cys Leu Lys Asn Asp Tyr Pro Arg Ile Ile Ser Tyr Asn Pro Pro Pro
50 55 60
Lys
65

<210> 111
<211> 636
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(636)

<400> 111
atg gcg gaa act aaa gag ttt aaa act ttg tat aat ctt ttt ata gat 48
Met Ala Glu Thr Lys Glu Phe Lys Thr Leu Tyr Asn Leu Phe Ile Asp
1 5 10 15
agt tat tta caa aaa tta gct caa cat tct atc cct act aat gtc act 96
Ser Tyr Leu Gln Lys Leu Ala Gln His Ser Ile Pro Thr Asn Val Thr
20 25 30
tgt gct att cat ata gga gag gtt ata gga cag ttt aaa aat tgc gcg 144

Cys	Ala	Ile	His	Ile	Gly	Glu	Val	Ile	Gly	Gln	Phe	Lys	Asn	Cys	Ala		
		35					40					45					
ctc	cga	ata	act	aac	aaa	tgc	atg	agt	aat	tct	cga	ctt	agt	ttc	aca	192	
Leu	Arg	Ile	Thr	Asn	Lys	Cys	Met	Ser	Asn	Ser	Arg	Leu	Ser	Phe	Thr		
	50					55					60						
ctc	atg	gtt	gaa	tca	ttt	att	gaa	gtg	att	tca	ttg	ctt	ccg	gaa	aag	240	
Leu	Met	Val	Glu	Ser	Phe	Ile	Glu	Val	Ile	Ser	Leu	Leu	Pro	Glu	Lys		
	65				70					75					80		
gat	aga	aga	gct	atc	gct	gag	gaa	ata	gga	ata	gat	cta	gat	gat	gta	288	
Asp	Arg	Arg	Ala	Ile	Ala	Glu	Glu	Ile	Gly	Ile	Asp	Leu	Asp	Asp	Val		
			85						90					95			
cct	agt	gta	gta	tcc	aag	cta	gaa	aag	aac	tgt	aat	gcg	tat	gcg	gag	336	
Pro	Ser	Val	Val	Ser	Lys	Leu	Glu	Lys	Asn	Cys	Asn	Ala	Tyr	Ala	Glu		
			100					105					110				
gtt	aat	aat	att	ata	gat	ata	cag	aaa	ttg	gat	atc	gga	gaa	tgt	tcg	384	
Val	Asn	Asn	Ile	Ile	Asp	Ile	Gln	Lys	Leu	Asp	Ile	Gly	Glu	Cys	Ser		
		115					120					125					
gct	ccg	ccc	ggc	caa	cat	atg	ctt	tta	cag	ata	gtt	aat	aca	gga	tcc	432	
Ala	Pro	Pro	Gly	Gln	His	Met	Leu	Leu	Gln	Ile	Val	Asn	Thr	Gly	Ser		
	130					135					140						
gcg	gaa	gca	aat	tgt	ggt	tta	cag	aca	att	gtt	aag	tcc	tta	aat	aaa	480	
Ala	Glu	Ala	Asn	Cys	Gly	Leu	Gln	Thr	Ile	Val	Lys	Ser	Leu	Asn	Lys		
	145				150					155					160		
ata	tac	gtt	cca	cct	att	atc	gaa	aac	cga	ttg	ccg	tat	tac	gat	ccg	528	
Ile	Tyr	Val	Pro	Pro	Ile	Ile	Glu	Asn	Arg	Leu	Pro	Tyr	Tyr	Asp	Pro		
				165					170					175			
tgg	ttt	cta	gtg	ggt	gta	gca	att	att	cta	gtt	att	ttt	act	gta	gct	576	
Trp	Phe	Leu	Val	Gly	Val	Ala	Ile	Ile	Leu	Val	Ile	Phe	Thr	Val	Ala		
			180					185					190				
att	tgt	tct	att	aga	cga	aat	ctg	gct	ctt	aaa	tac	aga	tac	gga	acg	624	
Ile	Cys	Ser	Ile	Arg	Arg	Asn	Leu	Ala	Leu	Lys	Tyr	Arg	Tyr	Gly	Thr		
		195					200					205					
ttt	tta	tac	gtt													636	
Phe	Leu	Tyr	Val														
			210														

<210> 112
 <211> 212
 <212> PRT
 <213> vaccinia virus

<400> 112
 Met Ala Glu Thr Lys Glu Phe Lys Thr Leu Tyr Asn Leu Phe Ile Asp
 1 5 10 15
 Ser Tyr Leu Gln Lys Leu Ala Gln His Ser Ile Pro Thr Asn Val Thr
 20 25 30
 Cys Ala Ile His Ile Gly Glu Val Ile Gly Gln Phe Lys Asn Cys Ala

gga tat ggt ata gtc ttt aag ata gat aac tat gta gta aaa ttt gta	336
Gly Tyr Gly Ile Val Phe Lys Ile Asp Asn Tyr Val Val Lys Phe Val	
100 105 110	
ttc gag gcc aca aaa tta tat agt ccc atg gaa act acg gcg gag ttc	384
Phe Glu Ala Thr Lys Leu Tyr Ser Pro Met Glu Thr Thr Ala Glu Phe	
115 120 125	
aca gta ccc aaa ttt cta tac aac aat cta aag gga gat gaa aaa aaa	432
Thr Val Pro Lys Phe Leu Tyr Asn Asn Leu Lys Gly Asp Glu Lys Lys	
130 135 140	
tta atc gtg tgt gcg tgg gcc atg gga tta aac tat aaa tta aca ttt	480
Leu Ile Val Cys Ala Trp Ala Met Gly Leu Asn Tyr Lys Leu Thr Phe	
145 150 155 160	
tta cat act ctg tat aaa cgg gtt ctt cat atg ttg cta tta ttg ata	528
Leu His Thr Leu Tyr Lys Arg Val Leu His Met Leu Leu Leu Leu Ile	
165 170 175	
caa act atg gat ggt cag gaa ctc tca ttg aga tat tct tct aaa gtt	576
Gln Thr Met Asp Gly Gln Glu Leu Ser Leu Arg Tyr Ser Ser Lys Val	
180 185 190	
ttt tta aag gcg ttt aac gag aga aag gac agt atc aaa ttc gtg aaa	624
Phe Leu Lys Ala Phe Asn Glu Arg Lys Asp Ser Ile Lys Phe Val Lys	
195 200 205	
tta cta tcc cac ttt tac ccg gca gtt att aac agt aat att aat gtt	672
Leu Leu Ser His Phe Tyr Pro Ala Val Ile Asn Ser Asn Ile Asn Val	
210 215 220	
ata aac tat ttt aac cgc atg ttt cac ttt ttc gaa cat gaa aag aga	720
Ile Asn Tyr Phe Asn Arg Met Phe His Phe Phe Glu His Glu Lys Arg	
225 230 235 240	
act aac tac gaa tac gaa aga gga aat att ata att ttt ccc cta gca	768
Thr Asn Tyr Glu Tyr Glu Arg Gly Asn Ile Ile Ile Phe Pro Leu Ala	
245 250 255	
ctg tat tct gca gat aaa gta gat acc gag tta gct atc aaa tta gga	816
Leu Tyr Ser Ala Asp Lys Val Asp Thr Glu Leu Ala Ile Lys Leu Gly	
260 265 270	
ttt aaa tct ttg gta caa tac ata aag ttt atc ttt tta cag atg gct	864
Phe Lys Ser Leu Val Gln Tyr Ile Lys Phe Ile Phe Leu Gln Met Ala	
275 280 285	
ctg tta tac att aaa att tac gaa cta cca tgc tgc gac aac ttt tta	912
Leu Leu Tyr Ile Lys Ile Tyr Glu Leu Pro Cys Cys Asp Asn Phe Leu	
290 295 300	
cac gca gat ctt aaa ccc gat aat atc tta ctt ttt gat tcc aat gaa	960
His Ala Asp Leu Lys Pro Asp Asn Ile Leu Leu Phe Asp Ser Asn Glu	
305 310 315 320	
cca ata ata att cat cta aag gat aaa aag ttt gtt ttt aat gaa cgt	1008
Pro Ile Ile Ile His Leu Lys Asp Lys Lys Phe Val Phe Asn Glu Arg	
325 330 335	

att aaa tcg gca tta aac gac ttt gac ttt tcc caa gtg gct gga atc	1056
Ile Lys Ser Ala Leu Asn Asp Phe Asp Phe Ser Gln Val Ala Gly Ile	
340 345 350	
att aac aag aaa ata aaa aac aat ttc aaa gtt aaa cat aac tgg tat	1104
Ile Asn Lys Lys Ile Lys Asn Asn Phe Lys Val Lys His Asn Trp Tyr	
355 360 365	
tac gat ttc cat ttc ttt gtt cat act tta tta aaa aca tat cca gaa	1152
Tyr Asp Phe His Phe Phe Val His Thr Leu Leu Lys Thr Tyr Pro Glu	
370 375 380	
atc gaa aaa gat atc gaa ttt agt aca gca tta gaa gaa ttc atc atg	1200
Ile Glu Lys Asp Ile Glu Phe Ser Thr Ala Leu Glu Glu Phe Ile Met	
385 390 395 400	
tgt acc aaa aca gac tgt gat aaa tat aga tta aag gtt tcc att ctt	1248
Cys Thr Lys Thr Asp Cys Asp Lys Tyr Arg Leu Lys Val Ser Ile Leu	
405 410 415	
cac cca att agt ttc ttg gaa aaa ttt att atg aga gac att ttc tca	1296
His Pro Ile Ser Phe Leu Glu Lys Phe Ile Met Arg Asp Ile Phe Ser	
420 425 430	
gac tgg ata aat ggc gga aac taa	1320
Asp Trp Ile Asn Gly Gly Asn *	
435	

<210> 114

<211> 439

<212> PRT

<213> vaccinia virus

<400> 114

Met Gly Val Ala Asn Asp Ser Ser Pro Glu Tyr Gln Trp Met Ser Pro	
1 5 10 15	
His Arg Leu Ser Asp Thr Val Ile Leu Gly Asp Cys Leu Tyr Phe Asn	
20 25 30	
Asn Ile Met Ser Gln Leu Asp Leu His Gln Asn Trp Ala Pro Ser Val	
35 40 45	
Arg Leu Leu Asn Tyr Phe Lys Asn Phe Asn Arg Glu Thr Leu Leu Lys	
50 55 60	
Ile Glu Glu Asn Asp Tyr Ile Asn Ser Ser Phe Phe Gln Gln Lys Asp	
65 70 75 80	
Lys Arg Phe Tyr Pro Ile Asn Asp Asp Phe Tyr His Ile Ser Thr Gly	
85 90 95	
Gly Tyr Gly Ile Val Phe Lys Ile Asp Asn Tyr Val Val Lys Phe Val	
100 105 110	
Phe Glu Ala Thr Lys Leu Tyr Ser Pro Met Glu Thr Thr Ala Glu Phe	
115 120 125	
Thr Val Pro Lys Phe Leu Tyr Asn Asn Leu Lys Gly Asp Glu Lys Lys	
130 135 140	
Leu Ile Val Cys Ala Trp Ala Met Gly Leu Asn Tyr Lys Leu Thr Phe	
145 150 155 160	
Leu His Thr Leu Tyr Lys Arg Val Leu His Met Leu Leu Leu Leu Ile	
165 170 175	
Gln Thr Met Asp Gly Gln Glu Leu Ser Leu Arg Tyr Ser Ser Lys Val	

50	55	60	
act atg ccg gta gaa aca ttg ttt gga tcg tac ata act gat gac agt			240
Thr Met Pro Val Glu Thr Leu Phe Gly Ser Tyr Ile Thr Asp Asp Ser			
65	70	75	80
gat gat tat gaa ctt aag gat tta ctc aat gtt aca tat aac att aaa			288
Asp Asp Tyr Glu Leu Lys Asp Leu Leu Asn Val Thr Tyr Asn Ile Lys			
	85	90	95
ccg gtc ata gtt cct gac atc aag tta gat gct gta tta gat aga gat			336
Pro Val Ile Val Pro Asp Ile Lys Leu Asp Ala Val Leu Asp Arg Asp			
	100	105	110
gga aat ttt aga cca gct gac tgt ttc ttg gtt aaa ctg aaa cat aga			384
Gly Asn Phe Arg Pro Ala Asp Cys Phe Leu Val Lys Leu Lys His Arg			
	115	120	125
gat gga ttc acc aaa gga gct ctc tat ctt ggt cac agt gca gga ttt			432
Asp Gly Phe Thr Lys Gly Ala Leu Tyr Leu Gly His Ser Ala Gly Phe			
	130	135	140
acg gca aca atc tgc tta aaa aat gag ggg gtt tca ggg ctt tac att			480
Thr Ala Thr Ile Cys Leu Lys Asn Glu Gly Val Ser Gly Leu Tyr Ile			
	145	150	155
cca ggt act tct gta att cgg tcc aat atc tgt caa gga gat act atc			528
Pro Gly Thr Ser Val Ile Arg Ser Asn Ile Cys Gln Gly Asp Thr Ile			
	165	170	175
gtc agt aga tca tct aga gga gtt caa ttt ctt cca caa ata gga gga			576
Val Ser Arg Ser Ser Arg Gly Val Gln Phe Leu Pro Gln Ile Gly Gly			
	180	185	190
gaa gct atc ttc ttg att gtt tca ctt tgt cct acc aaa aag tta gta			624
Glu Ala Ile Phe Leu Ile Val Ser Leu Cys Pro Thr Lys Lys Leu Val			
	195	200	205
gaa aca gga ttc gtc att cca gaa ata tcg tca aat gat aac gcc aaa			672
Glu Thr Gly Phe Val Ile Pro Glu Ile Ser Ser Asn Asp Asn Ala Lys			
	210	215	220
atc gct gct cgc att cta tca gag aaa cgc aag gac acc att gct cat			720
Ile Ala Ala Arg Ile Leu Ser Glu Lys Arg Lys Asp Thr Ile Ala His			
	225	230	235
att gac act cta ata caa cac agg caa caa ttg gaa ttg gct tac tat			768
Ile Asp Thr Leu Ile Gln His Arg Gln Gln Leu Glu Leu Ala Tyr Tyr			
	245	250	255
aat tcc tgc atg tta acc gag ttt ctg cat tat tgt aat tcg tat gct			816
Asn Ser Cys Met Leu Thr Glu Phe Leu His Tyr Cys Asn Ser Tyr Ala			
	260	265	270
ggc acc atc aaa gaa tca ctt cta aaa gaa aca att caa aaa gat atc			864
Gly Thr Ile Lys Glu Ser Leu Leu Lys Glu Thr Ile Gln Lys Asp Ile			
	275	280	285
aat atc aca cat aca aat att act acc cta ttg aat gag aca gcc aag			912

Asn	Ile	Thr	His	Thr	Asn	Ile	Thr	Thr	Leu	Leu	Asn	Glu	Thr	Ala	Lys	
290						295					300					
gtt	atc	aag	tta	gta	aaa	tct	ctg	gta	gat	aaa	gaa	gat	act	gat	att	960
Val	Ile	Lys	Leu	Val	Lys	Ser	Leu	Val	Asp	Lys	Glu	Asp	Thr	Asp	Ile	
305					310					315					320	
gtg	aat	aat	ttc	att	act	aaa	gaa	att	aaa	aac	aga	gac	aaa	ata	gtt	1008
Val	Asn	Asn	Phe	Ile	Thr	Lys	Glu	Ile	Lys	Asn	Arg	Asp	Lys	Ile	Val	
				325					330					335		
aat	agt	ttg	tct	cta	tca	aac	ctg	gac	ttt	cgt	ttg					1044
Asn	Ser	Leu	Ser	Leu	Ser	Asn	Leu	Asp	Phe	Arg	Leu					
				340					345							

<210> 116
 <211> 348
 <212> PRT
 <213> vaccinia virus

<400> 116

Met	Gly	Phe	Cys	Ile	Pro	Leu	Arg	Ser	Lys	Met	Leu	Lys	Arg	Gly	Ser
1				5					10					15	
Arg	Lys	Ser	Ser	Ile	Leu	Ala	Arg	Arg	Pro	Thr	Pro	Lys	Lys	Met	
			20				25					30			
Asn	Ile	Val	Thr	Asp	Leu	Glu	Asn	Arg	Leu	Lys	Lys	Asn	Ser	Tyr	Ile
		35					40					45			
Glu	Asn	Thr	Asn	Gln	Gly	Asn	Ile	Leu	Met	Asp	Ser	Ile	Phe	Val	Ser
	50					55					60				
Thr	Met	Pro	Val	Glu	Thr	Leu	Phe	Gly	Ser	Tyr	Ile	Thr	Asp	Asp	Ser
65				70					75						80
Asp	Asp	Tyr	Glu	Leu	Lys	Asp	Leu	Leu	Asn	Val	Thr	Tyr	Asn	Ile	Lys
				85					90					95	
Pro	Val	Ile	Val	Pro	Asp	Ile	Lys	Leu	Asp	Ala	Val	Leu	Asp	Arg	Asp
			100					105					110		
Gly	Asn	Phe	Arg	Pro	Ala	Asp	Cys	Phe	Leu	Val	Lys	Leu	Lys	His	Arg
		115				120						125			
Asp	Gly	Phe	Thr	Lys	Gly	Ala	Leu	Tyr	Leu	Gly	His	Ser	Ala	Gly	Phe
	130				135						140				
Thr	Ala	Thr	Ile	Cys	Leu	Lys	Asn	Glu	Gly	Val	Ser	Gly	Leu	Tyr	Ile
145				150						155					160
Pro	Gly	Thr	Ser	Val	Ile	Arg	Ser	Asn	Ile	Cys	Gln	Gly	Asp	Thr	Ile
			165						170					175	
Val	Ser	Arg	Ser	Ser	Arg	Gly	Val	Gln	Phe	Leu	Pro	Gln	Ile	Gly	Gly
			180					185					190		
Glu	Ala	Ile	Phe	Leu	Ile	Val	Ser	Leu	Cys	Pro	Thr	Lys	Lys	Leu	Val
		195					200					205			
Glu	Thr	Gly	Phe	Val	Ile	Pro	Glu	Ile	Ser	Ser	Asn	Asp	Asn	Ala	Lys
	210					215						220			
Ile	Ala	Ala	Arg	Ile	Leu	Ser	Glu	Lys	Arg	Lys	Asp	Thr	Ile	Ala	His
225					230					235					240
Ile	Asp	Thr	Leu	Ile	Gln	His	Arg	Gln	Gln	Leu	Glu	Leu	Ala	Tyr	Tyr
				245					250					255	
Asn	Ser	Cys	Met	Leu	Thr	Glu	Phe	Leu	His	Tyr	Cys	Asn	Ser	Tyr	Ala
			260					265					270		
Gly	Thr	Ile	Lys	Glu	Ser	Leu	Leu	Lys	Glu	Thr	Ile	Gln	Lys	Asp	Ile
		275					280					285			
Asn	Ile	Thr	His	Thr	Asn	Ile	Thr	Thr	Leu	Leu	Asn	Glu	Thr	Ala	Lys

290	Val	Ile	Lys	Leu	Val	Lys	Ser	Leu	Val	Asp	Lys	Glu	Asp	Thr	Asp	Ile
305	Val	Asn	Asn	Phe	Ile	Thr	Lys	Glu	Ile	Lys	Asn	Arg	Asp	Lys	Ile	Val
				325						330					335	
	Asn	Ser	Leu	Ser	Leu	Ser	Asn	Leu	Asp	Phe	Arg	Leu				
				340					345							

<210> 117
 <211> 1905
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1905)

<400> 117																	
atg tta aac agg ata caa acc ttg atg aaa aca gct aac aat tat gaa	48																
Met Leu Asn Arg Ile Gln Thr Leu Met Lys Thr Ala Asn Asn Tyr Glu																	
1 5 10 15																	
act att gag ata ttg cgt aat tat tta aga ctg tat att att ttg gca	96																
Thr Ile Glu Ile Leu Arg Asn Tyr Leu Arg Leu Tyr Ile Ile Leu Ala																	
20 25 30																	
cga aat gaa gaa ggt cat ggt ata cta ata tac gat gat aac ata gat	144																
Arg Asn Glu Glu Gly His Gly Ile Leu Ile Tyr Asp Asp Asn Ile Asp																	
35 40 45																	
agt att atg tcg atg atg aat att aca aga tta gaa gtt ata gga ttg	192																
Ser Ile Met Ser Met Met Asn Ile Thr Arg Leu Glu Val Ile Gly Leu																	
50 55 60																	
acg act cat tgc aca aaa tta aga tca tcg cct cca att cct atg tct	240																
Thr Thr His Cys Thr Lys Leu Arg Ser Ser Pro Pro Ile Pro Met Ser																	
65 70 75 80																	
aga ttg ttt atg gac gaa ata gat cat gag tca tat tat tct cca aaa	288																
Arg Leu Phe Met Asp Glu Ile Asp His Glu Ser Tyr Tyr Ser Pro Lys																	
85 90 95																	
act tca gat tat ccg ttg atc gat att ata cga aag cgt tcc cac gaa	336																
Thr Ser Asp Tyr Pro Leu Ile Asp Ile Ile Arg Lys Arg Ser His Glu																	
100 105 110																	
cag gga gat ata gca ctg gct tta gaa caa tac ggt atc gag aat aca	384																
Gln Gly Asp Ile Ala Leu Ala Leu Glu Gln Tyr Gly Ile Glu Asn Thr																	
115 120 125																	
gat tcc ata tca gaa att aat gaa tgg ttg tcg tca aaa ggt tta gca	432																
Asp Ser Ile Ser Glu Ile Asn Glu Trp Leu Ser Ser Lys Gly Leu Ala																	
130 135 140																	
tgt tat aga ttt gta aaa ttt aac gat tac agg aaa cag atg tat cgt	480																
Cys Tyr Arg Phe Val Lys Phe Asn Asp Tyr Arg Lys Gln Met Tyr Arg																	
145 150 155 160																	

aag ttc tct agg tgt act ata gtt gac agt atg ata ata ggg cat ata	528
Lys Phe Ser Arg Cys Thr Ile Val Asp Ser Met Ile Ile Gly His Ile	
165 170 175	
ggt cat cat tat att tgg att aaa aat tta gaa aca tat acg cgt ccc	576
Gly His His Tyr Ile Trp Ile Lys Asn Leu Glu Thr Tyr Thr Arg Pro	
180 185 190	
gaa att gat gtg tta ccg ttt gat att aaa tac ata tct aga gat gaa	624
Glu Ile Asp Val Leu Pro Phe Asp Ile Lys Tyr Ile Ser Arg Asp Glu	
195 200 205	
ttg tgg gcg cga att tct tcc tcg tta gat caa aca cat ata aaa acc	672
Leu Trp Ala Arg Ile Ser Ser Ser Leu Asp Gln Thr His Ile Lys Thr	
210 215 220	
atc gcc gta tca gtt tat gga gct att act gat aat gga cca ata cca	720
Ile Ala Val Ser Val Tyr Gly Ala Ile Thr Asp Asn Gly Pro Ile Pro	
225 230 235 240	
tat atg ata tcc acg tac ccg ggt aat acc ttt gtt aac ttt aac agt	768
Tyr Met Ile Ser Thr Tyr Pro Gly Asn Thr Phe Val Asn Phe Asn Ser	
245 250 255	
gta aaa gat cta att tta tat ttc tta gat tgg att aaa gat att atg	816
Val Lys Asp Leu Ile Leu Tyr Phe Leu Asp Trp Ile Lys Asp Ile Met	
260 265 270	
act agt aca cga act atc att cta gta ggt tac atg agt aat cta ttc	864
Thr Ser Thr Arg Thr Ile Ile Leu Val Gly Tyr Met Ser Asn Leu Phe	
275 280 285	
gat ata ccg ttg cta aca gta tac tgg ccc aat aac tgt gga tgg aaa	912
Asp Ile Pro Leu Leu Thr Val Tyr Trp Pro Asn Asn Cys Gly Trp Lys	
290 295 300	
atc tat aat aat aca tta ata tca tcc gat ggt gct agg gtt att tgg	960
Ile Tyr Asn Asn Thr Leu Ile Ser Ser Asp Gly Ala Arg Val Ile Trp	
305 310 315 320	
atg gat gcg tat aaa ttt tct tgc ggt tta tct tta caa gac tat tgt	1008
Met Asp Ala Tyr Lys Phe Ser Cys Gly Leu Ser Leu Gln Asp Tyr Cys	
325 330 335	
tat cat tgg ggt agc aaa cca gag agc cga cca ttc gat tta ata aaa	1056
Tyr His Trp Gly Ser Lys Pro Glu Ser Arg Pro Phe Asp Leu Ile Lys	
340 345 350	
aaa tca gat gct aaa cgc aat tct aaa tcg ttg gtc aaa gaa tct atg	1104
Lys Ser Asp Ala Lys Arg Asn Ser Lys Ser Leu Val Lys Glu Ser Met	
355 360 365	
gca tcc ttg aaa tcc ttg tac gag gca ttc gag aca caa tca gga gcg	1152
Ala Ser Leu Lys Ser Leu Tyr Glu Ala Phe Glu Thr Gln Ser Gly Ala	
370 375 380	
tta gaa gtt tta atg agt cca tgt agg atg ttt tcg ttt tct aga ata	1200
Leu Glu Val Leu Met Ser Pro Cys Arg Met Phe Ser Phe Ser Arg Ile	
385 390 395 400	

gaa gac atg ttc tta act agt gtc att aat aga gta tcc gag aat act	1248
Glu Asp Met Phe Leu Thr Ser Val Ile Asn Arg Val Ser Glu Asn Thr	
405 410 415	
gga atg ggg atg tat tat cct acc aac gat ata cct ttt cta ttt atc	1296
Gly Met Gly Met Tyr Tyr Pro Thr Asn Asp Ile Pro Phe Leu Phe Ile	
420 425 430	
gaa tca tct atc tgt cta gat tat att ata gta aat aat cag gaa tcc	1344
Glu Ser Ser Ile Cys Leu Asp Tyr Ile Ile Val Asn Asn Gln Glu Ser	
435 440 445	
aac aaa tat cgt atc aaa tct gtt ctc gat atc att tct tca aaa caa	1392
Asn Lys Tyr Arg Ile Lys Ser Val Leu Asp Ile Ile Ser Ser Lys Gln	
450 455 460	
tac cct gca gga cgt ccc aac tac gtt aaa aat ggt aca aaa gga aag	1440
Tyr Pro Ala Gly Arg Pro Asn Tyr Val Lys Asn Gly Thr Lys Gly Lys	
465 470 475 480	
tta tat atc gcg ttg tgt aaa gtt acc gta cct act aac gac cat att	1488
Leu Tyr Ile Ala Leu Cys Lys Val Thr Val Pro Thr Asn Asp His Ile	
485 490 495	
cca gta gtt tat cac gat gat gac aat act acc acc ttt att aca gta	1536
Pro Val Val Tyr His Asp Asp Asp Asn Thr Thr Thr Phe Ile Thr Val	
500 505 510	
ttg acg tcc gtc gat att gaa act gct atc aga gca gga tat tcg ata	1584
Leu Thr Ser Val Asp Ile Glu Thr Ala Ile Arg Ala Gly Tyr Ser Ile	
515 520 525	
gtc gaa tta ggg gct tta caa tgg gat gat aat att cca gaa ctt aaa	1632
Val Glu Leu Gly Ala Leu Gln Trp Asp Asp Asn Ile Pro Glu Leu Lys	
530 535 540	
gac tgt tta ctg gat agt atc aag atg att tat gac ttg aac gca gtc	1680
Asp Cys Leu Leu Asp Ser Ile Lys Met Ile Tyr Asp Leu Asn Ala Val	
545 550 555 560	
aca aca aat aat tta ttg gaa cag ctc ata gaa aat att aac ttt aac	1728
Thr Thr Asn Asn Leu Leu Glu Gln Leu Ile Glu Asn Ile Asn Phe Asn	
565 570 575	
aac tct agt ata att tcg ttg ttc tat aca ttt gcc att agt tat tgc	1776
Asn Ser Ser Ile Ile Ser Leu Phe Tyr Thr Phe Ala Ile Ser Tyr Cys	
580 585 590	
cga gca ttc att tac tca att atg gaa acc ata gat ccg gtg tat ata	1824
Arg Ala Phe Ile Tyr Ser Ile Met Glu Thr Ile Asp Pro Val Tyr Ile	
595 600 605	
tct cag ttc agt tat aaa gaa tta tac gtt agt agc tct tat aaa gat	1872
Ser Gln Phe Ser Tyr Lys Glu Leu Tyr Val Ser Ser Ser Tyr Lys Asp	
610 615 620	
att aat gaa tcc atg agt cag atg gta aaa tta	1905
Ile Asn Glu Ser Met Ser Gln Met Val Lys Leu	

625

630

635

<210> 118

<211> 635

<212> PRT

<213> vaccinia virus

<400> 118

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Met Leu Asn Arg Ile Gln Thr Leu Met Lys Thr Ala Asn Asn Tyr Glu
 1           5           10           15
Thr Ile Glu Ile Leu Arg Asn Tyr Leu Arg Leu Tyr Ile Ile Leu Ala
          20           25           30
Arg Asn Glu Glu Gly His Gly Ile Leu Ile Tyr Asp Asp Asn Ile Asp
          35           40           45
Ser Ile Met Ser Met Met Asn Ile Thr Arg Leu Glu Val Ile Gly Leu
          50           55           60
Thr Thr His Cys Thr Lys Leu Arg Ser Ser Pro Pro Ile Pro Met Ser
65          70           75           80
Arg Leu Phe Met Asp Glu Ile Asp His Glu Ser Tyr Tyr Ser Pro Lys
          85           90           95
Thr Ser Asp Tyr Pro Leu Ile Asp Ile Ile Arg Lys Arg Ser His Glu
          100          105          110
Gln Gly Asp Ile Ala Leu Ala Leu Glu Gln Tyr Gly Ile Glu Asn Thr
          115          120          125
Asp Ser Ile Ser Glu Ile Asn Glu Trp Leu Ser Ser Lys Gly Leu Ala
          130          135          140
Cys Tyr Arg Phe Val Lys Phe Asn Asp Tyr Arg Lys Gln Met Tyr Arg
145          150          155          160
Lys Phe Ser Arg Cys Thr Ile Val Asp Ser Met Ile Ile Gly His Ile
          165          170          175
Gly His His Tyr Ile Trp Ile Lys Asn Leu Glu Thr Tyr Thr Arg Pro
          180          185          190
Glu Ile Asp Val Leu Pro Phe Asp Ile Lys Tyr Ile Ser Arg Asp Glu
          195          200          205
Leu Trp Ala Arg Ile Ser Ser Ser Leu Asp Gln Thr His Ile Lys Thr
          210          215          220
Ile Ala Val Ser Val Tyr Gly Ala Ile Thr Asp Asn Gly Pro Ile Pro
225          230          235          240
Tyr Met Ile Ser Thr Tyr Pro Gly Asn Thr Phe Val Asn Phe Asn Ser
          245          250          255
Val Lys Asp Leu Ile Leu Tyr Phe Leu Asp Trp Ile Lys Asp Ile Met
          260          265          270
Thr Ser Thr Arg Thr Ile Ile Leu Val Gly Tyr Met Ser Asn Leu Phe
          275          280          285
Asp Ile Pro Leu Leu Thr Val Tyr Trp Pro Asn Asn Cys Gly Trp Lys
          290          295          300
Ile Tyr Asn Asn Thr Leu Ile Ser Ser Asp Gly Ala Arg Val Ile Trp
305          310          315          320
Met Asp Ala Tyr Lys Phe Ser Cys Gly Leu Ser Leu Gln Asp Tyr Cys
          325          330          335
Tyr His Trp Gly Ser Lys Pro Glu Ser Arg Pro Phe Asp Leu Ile Lys
          340          345          350
Lys Ser Asp Ala Lys Arg Asn Ser Lys Ser Leu Val Lys Glu Ser Met
          355          360          365
Ala Ser Leu Lys Ser Leu Tyr Glu Ala Phe Glu Thr Gln Ser Gly Ala
          370          375          380
Leu Glu Val Leu Met Ser Pro Cys Arg Met Phe Ser Phe Ser Arg Ile
385          390          395          400

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Glu Asp Met Phe Leu Thr Ser Val Ile Asn Arg Val Ser Glu Asn Thr
 405 410 415
 Gly Met Gly Met Tyr Tyr Pro Thr Asn Asp Ile Pro Phe Leu Phe Ile
 420 425 430
 Glu Ser Ser Ile Cys Leu Asp Tyr Ile Ile Val Asn Asn Gln Glu Ser
 435 440 445
 Asn Lys Tyr Arg Ile Lys Ser Val Leu Asp Ile Ile Ser Ser Lys Gln
 450 455 460
 Tyr Pro Ala Gly Arg Pro Asn Tyr Val Lys Asn Gly Thr Lys Gly Lys
 465 470 475 480
 Leu Tyr Ile Ala Leu Cys Lys Val Thr Val Pro Thr Asn Asp His Ile
 485 490 495
 Pro Val Val Tyr His Asp Asp Asp Asn Thr Thr Thr Phe Ile Thr Val
 500 505 510
 Leu Thr Ser Val Asp Ile Glu Thr Ala Ile Arg Ala Gly Tyr Ser Ile
 515 520 525
 Val Glu Leu Gly Ala Leu Gln Trp Asp Asp Asn Ile Pro Glu Leu Lys
 530 535 540
 Asp Cys Leu Leu Asp Ser Ile Lys Met Ile Tyr Asp Leu Asn Ala Val
 545 550 555 560
 Thr Thr Asn Asn Leu Leu Glu Gln Leu Ile Glu Asn Ile Asn Phe Asn
 565 570 575
 Asn Ser Ser Ile Ile Ser Leu Phe Tyr Thr Phe Ala Ile Ser Tyr Cys
 580 585 590
 Arg Ala Phe Ile Tyr Ser Ile Met Glu Thr Ile Asp Pro Val Tyr Ile
 595 600 605
 Ser Gln Phe Ser Tyr Lys Glu Leu Tyr Val Ser Ser Ser Tyr Lys Asp
 610 615 620
 Ile Asn Glu Ser Met Ser Gln Met Val Lys Leu
 625 630 635

<210> 119
 <211> 1116
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1116)

<400> 119
 atg tgg cca ttt gca tcg gta cct gcg gga gca aaa tgt agg ctg gta 48
 Met Trp Pro Phe Ala Ser Val Pro Ala Gly Ala Lys Cys Arg Leu Val
 1 5 10 15
 gaa aca cta cca gaa aat atg gat ttt aga tcc gat cat tta aca aca 96
 Glu Thr Leu Pro Glu Asn Met Asp Phe Arg Ser Asp His Leu Thr Thr
 20 25 30
 ttt gaa tgt ttt aac gaa att atc act cta gct aag aaa tat ata tac 144
 Phe Glu Cys Phe Asn Glu Ile Ile Thr Leu Ala Lys Lys Tyr Ile Tyr
 35 40 45
 ata gca tct ttt tgt tgt aat cct ctg agt acg act agg gga gcg ctt 192
 Ile Ala Ser Phe Cys Cys Asn Pro Leu Ser Thr Thr Arg Gly Ala Leu
 50 55 60
 att ttt gat aaa cta aaa gag gca tct gaa aaa ggg att aaa ata ata 240

Ile	Phe	Asp	Lys	Leu	Lys	Glu	Ala	Ser	Glu	Lys	Gly	Ile	Lys	Ile	Ile		
65					70					75					80		
ggt	ttg	cta	gat	gaa	cga	ggg	aaa	aga	aat	ctg	gga	gag	cta	caa	agt	288	
Val	Leu	Leu	Asp	Glu	Arg	Gly	Lys	Arg	Asn	Leu	Gly	Glu	Leu	Gln	Ser		
				85					90					95			
cac	tgc	ccg	gat	ata	aat	ttt	ata	acc	ggt	aat	ata	gat	aaa	aaa	aat	336	
His	Cys	Pro	Asp	Ile	Asn	Phe	Ile	Thr	Val	Asn	Ile	Asp	Lys	Lys	Asn		
			100					105					110				
aat	gtg	gga	cta	cta	ctc	ggt	tgt	ttt	tgg	gtg	tca	gat	gat	gaa	aga	384	
Asn	Val	Gly	Leu	Leu	Leu	Gly	Cys	Phe	Trp	Val	Ser	Asp	Asp	Glu	Arg		
		115				120						125					
tgt	tat	gta	gga	aac	gcg	tca	ttt	act	gga	gga	tct	ata	cat	acg	att	432	
Cys	Tyr	Val	Gly	Asn	Ala	Ser	Phe	Thr	Gly	Gly	Ser	Ile	His	Thr	Ile		
	130					135						140					
aaa	acg	tta	ggt	gta	tat	tct	gat	tat	ccc	ccg	ctg	gcc	aca	gat	ctt	480	
Lys	Thr	Leu	Gly	Val	Tyr	Ser	Asp	Tyr	Pro	Pro	Leu	Ala	Thr	Asp	Leu		
145					150					155					160		
cgt	aga	aga	ttt	gat	act	ttt	aaa	gcc	ttt	aat	agc	gca	aaa	aat	tca	528	
Arg	Arg	Arg	Phe	Asp	Thr	Phe	Lys	Ala	Phe	Asn	Ser	Ala	Lys	Asn	Ser		
				165					170					175			
tgg	ttg	aat	tta	tgc	tct	gcg	gct	tgt	tgt	ttg	cca	ggt	agc	act	gcg	576	
Trp	Leu	Asn	Leu	Cys	Ser	Ala	Ala	Cys	Cys	Leu	Pro	Val	Ser	Thr	Ala		
			180					185					190				
tat	cat	att	aag	aat	cct	ata	ggt	gga	gtg	ttc	ttt	act	gat	tct	ccg	624	
Tyr	His	Ile	Lys	Asn	Pro	Ile	Gly	Gly	Val	Phe	Phe	Thr	Asp	Ser	Pro		
		195				200						205					
gaa	cac	cta	ttg	gga	tat	tct	aga	gat	tta	gat	acc	gat	gta	ggt	att	672	
Glu	His	Leu	Leu	Gly	Tyr	Ser	Arg	Asp	Leu	Asp	Thr	Asp	Val	Val	Ile		
	210					215					220						
gat	aaa	ctc	agg	tca	gct	aag	act	agt	ata	gat	att	gaa	cat	ttg	gcc	720	
Asp	Lys	Leu	Arg	Ser	Ala	Lys	Thr	Ser	Ile	Asp	Ile	Glu	His	Leu	Ala		
225					230					235				240			
ata	ggt	ccc	act	aca	cgt	gtc	gac	ggt	aat	agc	tac	tat	tgg	ccc	gac	768	
Ile	Val	Pro	Thr	Thr	Arg	Val	Asp	Gly	Asn	Ser	Tyr	Tyr	Trp	Pro	Asp		
				245					250					255			
att	tac	aac	tcc	att	ata	gaa	gca	gcc	att	aat	aga	gga	ggt	aag	atc	816	
Ile	Tyr	Asn	Ser	Ile	Ile	Glu	Ala	Ala	Ile	Asn	Arg	Gly	Val	Lys	Ile		
			260					265					270				
aga	ctt	cta	ggt	ggt	aat	tgg	gat	aag	aac	gac	gta	tat	tct	atg	gca	864	
Arg	Leu	Leu	Val	Gly	Asn	Trp	Asp	Lys	Asn	Asp	Val	Tyr	Ser	Met	Ala		
		275				280						285					
acc	gcc	aga	agt	cta	gac	gcg	ttg	tgt	gtt	caa	aat	gat	cta	tct	gtg	912	
Thr	Ala	Arg	Ser	Leu	Asp	Ala	Leu	Cys	Val	Gln	Asn	Asp	Leu	Ser	Val		
	290					295					300						

aag gtt ttc act att cag aat aat aca aaa ttg ttg ata gtc gac gac	960
Lys Val Phe Thr Ile Gln Asn Asn Thr Lys Leu Leu Ile Val Asp Asp	
305 310 315 320	
gaa tat gtt cat atc act tcg gca aat ttc gac gga acc cat tac caa	1008
Glu Tyr Val His Ile Thr Ser Ala Asn Phe Asp Gly Thr His Tyr Gln	
325 330 335	
aat cac gga ttc gtc agt ttt aat agt ata gat aaa cag ctt gta agc	1056
Asn His Gly Phe Val Ser Phe Asn Ser Ile Asp Lys Gln Leu Val Ser	
340 345 350	
gag gct aaa aaa ata ttt gag aga gat tgg gta tct agc cac agt aaa	1104
Glu Ala Lys Lys Ile Phe Glu Arg Asp Trp Val Ser Ser His Ser Lys	
355 360 365	
tcg tta aaa att	1116
Ser Leu Lys Ile	
370	

<210> 120
 <211> 372
 <212> PRT
 <213> vaccinia virus

<400> 120

Met Trp Pro Phe Ala Ser Val Pro Ala Gly Ala Lys Cys Arg Leu Val	
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Glu Thr Leu Pro Glu Asn Met Asp Phe Arg Ser Asp His Leu Thr Thr	
20 25 30	
Phe Glu Cys Phe Asn Glu Ile Ile Thr Leu Ala Lys Lys Tyr Ile Tyr	
35 40 45	
Ile Ala Ser Phe Cys Cys Asn Pro Leu Ser Thr Thr Arg Gly Ala Leu	
50 55 60	
Ile Phe Asp Lys Leu Lys Glu Ala Ser Glu Lys Gly Ile Lys Ile Ile	
65 70 75 80	
Val Leu Leu Asp Glu Arg Gly Lys Arg Asn Leu Gly Glu Leu Gln Ser	
85 90 95	
His Cys Pro Asp Ile Asn Phe Ile Thr Val Asn Ile Asp Lys Lys Asn	
100 105 110	
Asn Val Gly Leu Leu Leu Gly Cys Phe Trp Val Ser Asp Asp Glu Arg	
115 120 125	
Cys Tyr Val Gly Asn Ala Ser Phe Thr Gly Gly Ser Ile His Thr Ile	
130 135 140	
Lys Thr Leu Gly Val Tyr Ser Asp Tyr Pro Pro Leu Ala Thr Asp Leu	
145 150 155 160	
Arg Arg Arg Phe Asp Thr Phe Lys Ala Phe Asn Ser Ala Lys Asn Ser	
165 170 175	
Trp Leu Asn Leu Cys Ser Ala Ala Cys Cys Leu Pro Val Ser Thr Ala	
180 185 190	
Tyr His Ile Lys Asn Pro Ile Gly Gly Val Phe Phe Thr Asp Ser Pro	
195 200 205	
Glu His Leu Leu Gly Tyr Ser Arg Asp Leu Asp Thr Asp Val Val Ile	
210 215 220	
Asp Lys Leu Arg Ser Ala Lys Thr Ser Ile Asp Ile Glu His Leu Ala	
225 230 235 240	
Ile Val Pro Thr Thr Arg Val Asp Gly Asn Ser Tyr Tyr Trp Pro Asp	
245 250 255	

Ile Tyr Asn Ser Ile Ile Glu Ala Ala Ile Asn Arg Gly Val Lys Ile
 260 265 270
 Arg Leu Leu Val Gly Asn Trp Asp Lys Asn Asp Val Tyr Ser Met Ala
 275 280 285
 Thr Ala Arg Ser Leu Asp Ala Leu Cys Val Gln Asn Asp Leu Ser Val
 290 295 300
 Lys Val Phe Thr Ile Gln Asn Asn Thr Lys Leu Leu Ile Val Asp Asp
 305 310 315 320
 Glu Tyr Val His Ile Thr Ser Ala Asn Phe Asp Gly Thr His Tyr Gln
 325 330 335
 Asn His Gly Phe Val Ser Phe Asn Ser Ile Asp Lys Gln Leu Val Ser
 340 345 350
 Glu Ala Lys Lys Ile Phe Glu Arg Asp Trp Val Ser Ser His Ser Lys
 355 360 365
 Ser Leu Lys Ile
 370

<210> 121
 <211> 219
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)... (219)

<400> 121
 atg aaa cac aga ttg tat tct gaa gga ttg agt att agt aat gat tta 48
 Met Lys His Arg Leu Tyr Ser Glu Gly Leu Ser Ile Ser Asn Asp Leu
 1 5 10 15

 aac tcg ata atc ggt caa caa tct aca atg gat acg gat ata gaa ata 96
 Asn Ser Ile Ile Gly Gln Gln Ser Thr Met Asp Thr Asp Ile Glu Ile
 20 25 30

 aac gaa gat gac atc atg gaa ctt ctt aat ata ttg act gag tta ggt 144
 Asn Glu Asp Asp Ile Met Glu Leu Leu Asn Ile Leu Thr Glu Leu Gly
 35 40 45

 tgt gat gtc gac ttt gat gaa aat ttt agc gat ata gcc gat gat att 192
 Cys Asp Val Asp Phe Asp Glu Asn Phe Ser Asp Ile Ala Asp Asp Ile
 50 55 60

 cta gaa tcg ttg ata gaa cag gat gta 219
 Leu Glu Ser Leu Ile Glu Gln Asp Val
 65 70

<210> 122
 <211> 73
 <212> PRT
 <213> vaccinia virus

<400> 122
 Met Lys His Arg Leu Tyr Ser Glu Gly Leu Ser Ile Ser Asn Asp Leu
 1 5 10 15
 Asn Ser Ile Ile Gly Gln Gln Ser Thr Met Asp Thr Asp Ile Glu Ile
 20 25 30

Asn Glu Asp Asp Ile Met Glu Leu Leu Asn Ile Leu Thr Glu Leu Gly
 35 40 45
 Cys Asp Val Asp Phe Asp Glu Asn Phe Ser Asp Ile Ala Asp Asp Ile
 50 55 60
 Leu Glu Ser Leu Ile Glu Gln Asp Val
 65 70

<210> 123
 <211> 474
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(474)

<400> 123
 atg agg agt att gcg ggg cta cat aaa tta aaa atg gaa att ttt aat 48
 Met Arg Ser Ile Ala Gly Leu His Lys Leu Lys Met Glu Ile Phe Asn
 1 5 10 15
 gta gaa gaa ttg ata aat atg aaa cct ttt aag aat atg aat aaa ata 96
 Val Glu Glu Leu Ile Asn Met Lys Pro Phe Lys Asn Met Asn Lys Ile
 20 25 30
 aca att aat caa aag gat aat tgt ata tta gca aat cga tgc ttt gtt 144
 Thr Ile Asn Gln Lys Asp Asn Cys Ile Leu Ala Asn Arg Cys Phe Val
 35 40 45
 aaa ata gat act cct aga tac ata cca tcg aca tcc att agc agt tct 192
 Lys Ile Asp Thr Pro Arg Tyr Ile Pro Ser Thr Ser Ile Ser Ser Ser
 50 55 60
 aat atc atc aga ata cgg aat cat gat ttt aca tta tct gaa tta ttg 240
 Asn Ile Ile Arg Ile Arg Asn His Asp Phe Thr Leu Ser Glu Leu Leu
 65 70 75 80
 tat tca ccg ttt cat ttt caa cag cct cag ttt caa tat ctc ctt cct 288
 Tyr Ser Pro Phe His Phe Gln Gln Pro Gln Phe Gln Tyr Leu Leu Pro
 85 90 95
 ggg ttt gta tta acg tgt att gat aaa gtt tcg aaa cag caa aaa aaa 336
 Gly Phe Val Leu Thr Cys Ile Asp Lys Val Ser Lys Gln Gln Lys Lys
 100 105 110
 tgt aaa tat tgt atc tct aat cgt gga aat gat gat agt tta agc att 384
 Cys Lys Tyr Cys Ile Ser Asn Arg Gly Asn Asp Asp Ser Leu Ser Ile
 115 120 125
 aat cta ttt att ccg act att aac aag tct ata tat att att atc ggt 432
 Asn Leu Phe Ile Pro Thr Ile Asn Lys Ser Ile Tyr Ile Ile Ile Gly
 130 135 140
 tta cgg atg aaa aat ttt tgg aag cct aaa ttc gaa ata gaa 474
 Leu Arg Met Lys Asn Phe Trp Lys Pro Lys Phe Glu Ile Glu
 145 150 155

<210> 124
 <211> 158
 <212> PRT
 <213> vaccinia virus

<400> 124
 Met Arg Ser Ile Ala Gly Leu His Lys Leu Lys Met Glu Ile Phe Asn
 1 5 10 15
 Val Glu Glu Leu Ile Asn Met Lys Pro Phe Lys Asn Met Asn Lys Ile
 20 25 30
 Thr Ile Asn Gln Lys Asp Asn Cys Ile Leu Ala Asn Arg Cys Phe Val
 35 40 45
 Lys Ile Asp Thr Pro Arg Tyr Ile Pro Ser Thr Ser Ile Ser Ser Ser
 50 55 60
 Asn Ile Ile Arg Ile Arg Asn His Asp Phe Thr Leu Ser Glu Leu Leu
 65 70 75 80
 Tyr Ser Pro Phe His Phe Gln Gln Pro Gln Phe Gln Tyr Leu Leu Pro
 85 90 95
 Gly Phe Val Leu Thr Cys Ile Asp Lys Val Ser Lys Gln Gln Lys Lys
 100 105 110
 Cys Lys Tyr Cys Ile Ser Asn Arg Gly Asn Asp Asp Ser Leu Ser Ile
 115 120 125
 Asn Leu Phe Ile Pro Thr Ile Asn Lys Ser Ile Tyr Ile Ile Ile Gly
 130 135 140
 Leu Arg Met Lys Asn Phe Trp Lys Pro Lys Phe Glu Ile Glu
 145 150 155

<210> 125
 <211> 693
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(693)

<400> 125
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 Met Lys Val Val Ile Val Thr Ser Val Ala Ser Leu Leu Asp Ala Ser
 1 5 10 15
 att cag ttt caa aaa acg gca tgt agg cat cac tgt aat tac cta tct 96
 Ile Gln Phe Gln Lys Thr Ala Cys Arg His His Cys Asn Tyr Leu Ser
 20 25 30
 atg caa gta gtt aaa gag ata gaa gaa ttt ggt act atc aat gaa aaa 144
 Met Gln Val Val Lys Glu Ile Glu Glu Phe Gly Thr Ile Asn Glu Lys
 35 40 45
 aat ttg gaa ttt gac act tgg aaa gac gtt ata caa aac gat gaa ata 192
 Asn Leu Glu Phe Asp Thr Trp Lys Asp Val Ile Gln Asn Asp Glu Ile
 50 55 60
 gat gca tta gta ttt tat aga gta aaa caa att agt att tct acg ggt 240
 Asp Ala Leu Val Phe Tyr Arg Val Lys Gln Ile Ser Ile Ser Thr Gly
 65 70 75 80
 gtt cta tat aaa tct atg atg cgc aat aga aca aaa cct att tcc atg 288

Val	Leu	Tyr	Lys	Ser	Met	Met	Arg	Asn	Arg	Thr	Lys	Pro	Ile	Ser	Met		
				85					90					95			
tac	ttt	gta	cgt	gat	tgt	ttg	gca	ttt	gat	gga	gat	cct	ccg	tct	ttt	336	
Tyr	Phe	Val	Arg	Asp	Cys	Leu	Ala	Phe	Asp	Gly	Asp	Pro	Pro	Ser	Phe		
			100					105					110				
aga	atg	acg	tct	tgc	aat	atc	aac	gca	tac	aat	cgt	agt	aag	att	aaa	384	
Arg	Met	Thr	Ser	Cys	Asn	Ile	Asn	Ala	Tyr	Asn	Arg	Ser	Lys	Ile	Lys		
		115					120					125					
gat	ttg	ata	atc	cta	atg	aat	atg	aaa	aca	tgt	aat	aaa	aaa	att	atc	432	
Asp	Leu	Ile	Ile	Leu	Met	Asn	Met	Lys	Thr	Cys	Asn	Lys	Lys	Ile	Ile		
	130					135					140						
ggg	gag	ttt	ata	ata	gac	aat	ttt	gga	agc	gtt	gat	gca	tta	cta	tcg	480	
Gly	Glu	Phe	Ile	Ile	Asp	Asn	Phe	Gly	Ser	Val	Asp	Ala	Leu	Leu	Ser		
	145				150					155					160		
ata	att	aat	tct	aat	gtt	acg	tgg	gtt	aca	tca	gtt	ata	aat	aat	agt	528	
Ile	Ile	Asn	Ser	Asn	Val	Thr	Trp	Val	Thr	Ser	Val	Ile	Asn	Asn	Ser		
				165				170						175			
aac	ggc	agg	ggg	att	aat	atc	agg	gta	tca	aat	aat	aaa	atg	tta	act	576	
Asn	Gly	Arg	Gly	Ile	Asn	Ile	Arg	Val	Ser	Asn	Asn	Lys	Met	Leu	Thr		
			180					185					190				
ata	act	agt	ttt	cga	cga	ttt	gtc	aat	aaa	ctt	aaa	atg	tac	aaa	act	624	
Ile	Thr	Ser	Phe	Arg	Arg	Phe	Val	Asn	Lys	Leu	Lys	Met	Tyr	Lys	Thr		
		195					200					205					
act	aaa	tgc	gct	tct	caa	ttg	gat	aat	cta	tgt	acc	gag	atg	aac	aaa	672	
Thr	Lys	Cys	Ala	Ser	Gln	Leu	Asp	Asn	Leu	Cys	Thr	Glu	Met	Asn	Lys		
	210					215					220						
atg	gat	att	ata	gac	aaa	aaa										693	
Met	Asp	Ile	Ile	Asp	Lys	Lys											
	225				230												

<210> 126
 <211> 231
 <212> PRT
 <213> vaccinia virus

<400> 126

Met	Lys	Val	Val	Ile	Val	Thr	Ser	Val	Ala	Ser	Leu	Leu	Asp	Ala	Ser		
1				5					10					15			
Ile	Gln	Phe	Gln	Lys	Thr	Ala	Cys	Arg	His	His	Cys	Asn	Tyr	Leu	Ser		
			20					25					30				
Met	Gln	Val	Val	Lys	Glu	Ile	Glu	Glu	Phe	Gly	Thr	Ile	Asn	Glu	Lys		
		35					40					45					
Asn	Leu	Glu	Phe	Asp	Thr	Trp	Lys	Asp	Val	Ile	Gln	Asn	Asp	Glu	Ile		
	50					55					60						
Asp	Ala	Leu	Val	Phe	Tyr	Arg	Val	Lys	Gln	Ile	Ser	Ile	Ser	Thr	Gly		
	65				70				75					80			
Val	Leu	Tyr	Lys	Ser	Met	Met	Arg	Asn	Arg	Thr	Lys	Pro	Ile	Ser	Met		
			85					90						95			
Tyr	Phe	Val	Arg	Asp	Cys	Leu	Ala	Phe	Asp	Gly	Asp	Pro	Pro	Ser	Phe		

			100					105				110			
Arg	Met	Thr	Ser	Cys	Asn	Ile	Asn	Ala	Tyr	Asn	Arg	Ser	Lys	Ile	Lys
		115					120					125			
Asp	Leu	Ile	Ile	Leu	Met	Asn	Met	Lys	Thr	Cys	Asn	Lys	Lys	Ile	Ile
	130					135					140				
Gly	Glu	Phe	Ile	Ile	Asp	Asn	Phe	Gly	Ser	Val	Asp	Ala	Leu	Leu	Ser
145					150					155					160
Ile	Ile	Asn	Ser	Asn	Val	Thr	Trp	Val	Thr	Ser	Val	Ile	Asn	Asn	Ser
			165					170					175		
Asn	Gly	Arg	Gly	Ile	Asn	Ile	Arg	Val	Ser	Asn	Asn	Lys	Met	Leu	Thr
		180					185					190			
Ile	Thr	Ser	Phe	Arg	Arg	Phe	Val	Asn	Lys	Leu	Lys	Met	Tyr	Lys	Thr
	195					200					205				
Thr	Lys	Cys	Ala	Ser	Gln	Leu	Asp	Asn	Leu	Cys	Thr	Glu	Met	Asn	Lys
210					215					220					
Met	Asp	Ile	Ile	Asp	Lys	Lys									
225					230										

<210> 127
 <211> 306
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(306)

<400> 127

atg	aat	tct	cat	ttt	gca	tct	gct	cat	act	ccg	ttt	tat	atc	aat	acc	48
Met	Asn	Ser	His	Phe	Ala	Ser	Ala	His	Thr	Pro	Phe	Tyr	Ile	Asn	Thr	
1				5				10					15			
aaa	gaa	gga	aga	tat	ctg	gtt	cta	aaa	gcc	gtt	aaa	gta	tgc	gat	gtt	96
Lys	Glu	Gly	Arg	Tyr	Leu	Val	Leu	Lys	Ala	Val	Lys	Val	Cys	Asp	Val	
			20					25					30			
aga	act	gta	gaa	tgc	gaa	gga	agt	aaa	gct	tcc	tgc	gta	ctc	aaa	gta	144
Arg	Thr	Val	Glu	Cys	Glu	Gly	Ser	Lys	Ala	Ser	Cys	Val	Leu	Lys	Val	
		35					40					45				
gat	aaa	ccc	tca	tca	ccc	gcg	tgt	gag	aga	aga	cct	tcg	tcc	ccg	tcc	192
Asp	Lys	Pro	Ser	Ser	Pro	Ala	Cys	Glu	Arg	Arg	Pro	Ser	Ser	Pro	Ser	
	50					55					60					
aga	tgc	gag	aga	atg	aat	aac	cct	gga	aaa	caa	gtc	ccg	ttt	atg	aga	240
Arg	Cys	Glu	Arg	Met	Asn	Asn	Pro	Gly	Lys	Gln	Val	Pro	Phe	Met	Arg	
65					70				75					80		
acg	gac	atg	cta	caa	aat	atg	ttc	gcg	gct	aat	cgc	gac	aac	gtg	gcg	288
Thr	Asp	Met	Leu	Gln	Asn	Met	Phe	Ala	Ala	Asn	Arg	Asp	Asn	Val	Ala	
			85						90					95		
tcg	aga	ctt	ttg	aac	taa											306
Ser	Arg	Leu	Leu	Asn	*											
			100													

<210> 128

<211> 101
 <212> PRT
 <213> vaccinia virus

<400> 128
 Met Asn Ser His Phe Ala Ser Ala His Thr Pro Phe Tyr Ile Asn Thr
 1 5 10 15
 Lys Glu Gly Arg Tyr Leu Val Leu Lys Ala Val Lys Val Cys Asp Val
 20 25 30
 Arg Thr Val Glu Cys Glu Gly Ser Lys Ala Ser Cys Val Leu Lys Val
 35 40 45
 Asp Lys Pro Ser Ser Pro Ala Cys Glu Arg Arg Pro Ser Ser Pro Ser
 50 55 60
 Arg Cys Glu Arg Met Asn Asn Pro Gly Lys Gln Val Pro Phe Met Arg
 65 70 75 80
 Thr Asp Met Leu Gln Asn Met Phe Ala Ala Asn Arg Asp Asn Val Ala
 85 90 95
 Ser Arg Leu Leu Asn
 100

<210> 129
 <211> 1437
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1437)

<400> 129
 atg aat agg aat cct gat cag aat act ttt cct aat att aca tta aag 48
 Met Asn Arg Asn Pro Asp Gln Asn Thr Phe Pro Asn Ile Thr Leu Lys
 1 5 10 15
 att ata gaa acc tat tta ggc aga gta cct agt gtg aac gaa tat cat 96
 Ile Ile Glu Thr Tyr Leu Gly Arg Val Pro Ser Val Asn Glu Tyr His
 20 25 30
 atg tta aaa tta caa gct aga aat att cag aaa ata act gtt ttt aac 144
 Met Leu Lys Leu Gln Ala Arg Asn Ile Gln Lys Ile Thr Val Phe Asn
 35 40 45
 aaa gac ata ttt gta tct tta gta aaa aag aat aaa aaa aga ttt ttt 192
 Lys Asp Ile Phe Val Ser Leu Val Lys Lys Asn Lys Lys Arg Phe Phe
 50 55 60
 tcc gat gtt gat aca tct gca tca gaa ata aaa gat cgt ata ctt agc 240
 Ser Asp Val Asp Thr Ser Ala Ser Glu Ile Lys Asp Arg Ile Leu Ser
 65 70 75 80
 tac ttt tct aaa cag act caa aca tat aat ata ggt aaa tta ttt acg 288
 Tyr Phe Ser Lys Gln Thr Gln Thr Tyr Asn Ile Gly Lys Leu Phe Thr
 85 90 95
 att ata gaa cta caa tct gta tta gtg acc aca tac acg gac ata tta 336
 Ile Ile Glu Leu Gln Ser Val Leu Val Thr Thr Tyr Thr Asp Ile Leu
 100 105 110

gga gtt ctt act att aaa gct cca aat gta att tca tct aaa att tct	384
Gly Val Leu Thr Ile Lys Ala Pro Asn Val Ile Ser Ser Lys Ile Ser	
115 120 125	
tat aat gta aca tca atg gaa gaa ttg gca aga gat atg cta aat tct	432
Tyr Asn Val Thr Ser Met Glu Glu Leu Ala Arg Asp Met Leu Asn Ser	
130 135 140	
atg aac gtc gca gta ata gac aag gca aaa gta atg gga cgt cat aat	480
Met Asn Val Ala Val Ile Asp Lys Ala Lys Val Met Gly Arg His Asn	
145 150 155 160	
gta tct tcc cta gtc aaa aat gtt aat aag ttg atg gaa gaa tat ctt	528
Val Ser Ser Leu Val Lys Asn Val Asn Lys Leu Met Glu Glu Tyr Leu	
165 170 175	
aga cgc cat aat aaa agt tgt ata tgt tac gga tca tat tct cta tat	576
Arg Arg His Asn Lys Ser Cys Ile Cys Tyr Gly Ser Tyr Ser Leu Tyr	
180 185 190	
cta att aat cca aat ata cta tac ggc gat ata gat att ctt cag act	624
Leu Ile Asn Pro Asn Ile Leu Tyr Gly Asp Ile Asp Ile Leu Gln Thr	
195 200 205	
aat tct agg act ttt ctt ata gat ttg gcc ttt cta ata aaa ttt atc	672
Asn Ser Arg Thr Phe Leu Ile Asp Leu Ala Phe Leu Ile Lys Phe Ile	
210 215 220	
acg gga aat aat att ata tta agt aaa atc cca tat ctt aga aac tat	720
Thr Gly Asn Asn Ile Ile Leu Ser Lys Ile Pro Tyr Leu Arg Asn Tyr	
225 230 235 240	
atg gtg ata aaa gat gaa aac gat aat cat atc att gat agt ttt aat	768
Met Val Ile Lys Asp Glu Asn Asp Asn His Ile Ile Asp Ser Phe Asn	
245 250 255	
att cgc cag gat acc atg aac gta gtt cct aaa atc ttt ata gat aat	816
Ile Arg Gln Asp Thr Met Asn Val Val Pro Lys Ile Phe Ile Asp Asn	
260 265 270	
atc tat ata gtg gat ccg acg ttt caa cta ttg aac atg ata aaa atg	864
Ile Tyr Ile Val Asp Pro Thr Phe Gln Leu Leu Asn Met Ile Lys Met	
275 280 285	
ttt tct caa ata gat aga ttg gaa gat cta tcc aaa gat cct gaa aag	912
Phe Ser Gln Ile Asp Arg Leu Glu Asp Leu Ser Lys Asp Pro Glu Lys	
290 295 300	
ttt aat gcg cgt atg gca acc atg cta gaa tac gtt aga tat aca cat	960
Phe Asn Ala Arg Met Ala Thr Met Leu Glu Tyr Val Arg Tyr Thr His	
305 310 315 320	
ggt ata gtc ttt gat ggt aag cgt aat aat atg ccg atg aaa tgt atc	1008
Gly Ile Val Phe Asp Gly Lys Arg Asn Asn Met Pro Met Lys Cys Ile	
325 330 335	
atc gat gaa aat aat cgc ata gtt act gtc act act aaa gac tat ttt	1056
Ile Asp Glu Asn Arg Arg Ile Val Thr Val Thr Thr Lys Asp Tyr Phe	
340 345 350	

agc ttt aaa aaa tgt cta gtg tat cta gat gaa aat gtg tta tcg agt 1104
 Ser Phe Lys Lys Cys Leu Val Tyr Leu Asp Glu Asn Val Leu Ser Ser
 355 360 365
 gat ata tta gat ctt aac gcc gac aca tcg tgt gat ttc gag agt gtt 1152
 Asp Ile Leu Asp Leu Asn Ala Asp Thr Ser Cys Asp Phe Glu Ser Val
 370 375 380
 aca aat tct gta tat cta att cat gat aat atc atg tat aca tat ttc 1200
 Thr Asn Ser Val Tyr Leu Ile His Asp Asn Ile Met Tyr Thr Tyr Phe
 385 390 395 400
 tca aat act att ctc ctt agt gat aag ggg aag gta cat gaa ata agt 1248
 Ser Asn Thr Ile Leu Leu Ser Asp Lys Gly Lys Val His Glu Ile Ser
 405 410 415
 gcc aga ggt tta tgt gca cat ata ttg ttg tat cag atg ctg aca tct 1296
 Ala Arg Gly Leu Cys Ala His Ile Leu Leu Tyr Gln Met Leu Thr Ser
 420 425 430
 gga gaa tac aaa caa tgt tta tcg gat ctc tta aat tcg atg atg aat 1344
 Gly Glu Tyr Lys Gln Cys Leu Ser Asp Leu Leu Asn Ser Met Met Asn
 435 440 445
 aga gat aaa ata cct atc tat tca cat act gaa aga gat aaa aaa ccc 1392
 Arg Asp Lys Ile Pro Ile Tyr Ser His Thr Glu Arg Asp Lys Lys Pro
 450 455 460
 ggg cga cac gga ttt att aat atc gaa aaa gat ata att gta ttt 1437
 Gly Arg His Gly Phe Ile Asn Ile Glu Lys Asp Ile Ile Val Phe
 465 470 475

<210> 130
 <211> 479
 <212> PRT
 <213> vaccinia virus

<400> 130
 Met Asn Arg Asn Pro Asp Gln Asn Thr Phe Pro Asn Ile Thr Leu Lys
 1 5 10 15
 Ile Ile Glu Thr Tyr Leu Gly Arg Val Pro Ser Val Asn Glu Tyr His
 20 25 30
 Met Leu Lys Leu Gln Ala Arg Asn Ile Gln Lys Ile Thr Val Phe Asn
 35 40 45
 Lys Asp Ile Phe Val Ser Leu Val Lys Lys Asn Lys Lys Arg Phe Phe
 50 55 60
 Ser Asp Val Asp Thr Ser Ala Ser Glu Ile Lys Asp Arg Ile Leu Ser
 65 70 75 80
 Tyr Phe Ser Lys Gln Thr Gln Thr Tyr Asn Ile Gly Lys Leu Phe Thr
 85 90 95
 Ile Ile Glu Leu Gln Ser Val Leu Val Thr Thr Tyr Thr Asp Ile Leu
 100 105 110
 Gly Val Leu Thr Ile Lys Ala Pro Asn Val Ile Ser Ser Lys Ile Ser
 115 120 125
 Tyr Asn Val Thr Ser Met Glu Leu Ala Arg Asp Met Leu Asn Ser
 130 135 140

Met Asn Val Ala Val Ile Asp Lys Ala Lys Val Met Gly Arg His Asn
 145 150 155 160
 Val Ser Ser Leu Val Lys Asn Val Asn Lys Leu Met Glu Glu Tyr Leu
 165 170 175
 Arg Arg His Asn Lys Ser Cys Ile Cys Tyr Gly Ser Tyr Ser Leu Tyr
 180 185 190
 Leu Ile Asn Pro Asn Ile Leu Tyr Gly Asp Ile Asp Ile Leu Gln Thr
 195 200 205
 Asn Ser Arg Thr Phe Leu Ile Asp Leu Ala Phe Leu Ile Lys Phe Ile
 210 215 220
 Thr Gly Asn Asn Ile Ile Leu Ser Lys Ile Pro Tyr Leu Arg Asn Tyr
 225 230 235 240
 Met Val Ile Lys Asp Glu Asn Asp Asn His Ile Ile Asp Ser Phe Asn
 245 250 255
 Ile Arg Gln Asp Thr Met Asn Val Val Pro Lys Ile Phe Ile Asp Asn
 260 265 270
 Ile Tyr Ile Val Asp Pro Thr Phe Gln Leu Leu Asn Met Ile Lys Met
 275 280 285
 Phe Ser Gln Ile Asp Arg Leu Glu Asp Leu Ser Lys Asp Pro Glu Lys
 290 295 300
 Phe Asn Ala Arg Met Ala Thr Met Leu Glu Tyr Val Arg Tyr Thr His
 305 310 315 320
 Gly Ile Val Phe Asp Gly Lys Arg Asn Asn Met Pro Met Lys Cys Ile
 325 330 335
 Ile Asp Glu Asn Asn Arg Ile Val Thr Val Thr Thr Lys Asp Tyr Phe
 340 345 350
 Ser Phe Lys Lys Cys Leu Val Tyr Leu Asp Glu Asn Val Leu Ser Ser
 355 360 365
 Asp Ile Leu Asp Leu Asn Ala Asp Thr Ser Cys Asp Phe Glu Ser Val
 370 375 380
 Thr Asn Ser Val Tyr Leu Ile His Asp Asn Ile Met Tyr Thr Tyr Phe
 385 390 395 400
 Ser Asn Thr Ile Leu Leu Ser Asp Lys Gly Lys Val His Glu Ile Ser
 405 410 415
 Ala Arg Gly Leu Cys Ala His Ile Leu Leu Tyr Gln Met Leu Thr Ser
 420 425 430
 Gly Glu Tyr Lys Gln Cys Leu Ser Asp Leu Leu Asn Ser Met Met Asn
 435 440 445
 Arg Asp Lys Ile Pro Ile Tyr Ser His Thr Glu Arg Asp Lys Lys Pro
 450 455 460
 Gly Arg His Gly Phe Ile Asn Ile Glu Lys Asp Ile Ile Val Phe
 465 470 475

<210> 131
 <211> 2214
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(2214)

<400> 131
 atg ata tct gtg aca gat att cgt aga gcg ttt cta gat aat gaa tgt 48
 Met Ile Ser Val Thr Asp Ile Arg Arg Ala Phe Leu Asp Asn Glu Cys
 1 5 10 15
 cat act atc aca aaa gcg ttt gga tat ttg cac gag gac aat gcg ata 96

His Thr Ile Thr Lys Ala Phe Gly Tyr Leu His Glu Asp Asn Ala Ile	
20 25 30	
gca tta att aaa ata gga ttt cat ccc act tat cta ccc aaa gtc ctt	144
Ala Leu Ile Lys Ile Gly Phe His Pro Thr Tyr Leu Pro Lys Val Leu	
35 40 45	
tat aat aat gtt gta gaa ttc gtt cca gaa aaa cta tat ctg ttt aag	192
Tyr Asn Asn Val Val Glu Phe Val Pro Glu Lys Leu Tyr Leu Phe Lys	
50 55 60	
cca aga act gta gct cca ttg gat ttg ata tct act ata aca aaa tta	240
Pro Arg Thr Val Ala Pro Leu Asp Leu Ile Ser Thr Ile Thr Lys Leu	
65 70 75 80	
aag aac gtg gac aaa ttt gcc tca cac ata aat tat cac aag aat agt	288
Lys Asn Val Asp Lys Phe Ala Ser His Ile Asn Tyr His Lys Asn Ser	
85 90 95	
ata ttg ata aca gga gac aag tct cta att gtt aaa tgt atg cct tac	336
Ile Leu Ile Thr Gly Asp Lys Ser Leu Ile Val Lys Cys Met Pro Tyr	
100 105 110	
atg att att tca gat gat gat ata cga ttc ata aga gaa cag ttt gtt	384
Met Ile Ile Ser Asp Asp Asp Ile Arg Phe Ile Arg Glu Gln Phe Val	
115 120 125	
ggt aca aat tct att gag tat atc cta tcc ttc atc aac aag gaa agc	432
Gly Thr Asn Ser Ile Glu Tyr Ile Leu Ser Phe Ile Asn Lys Glu Ser	
130 135 140	
ata tat aaa atg agt tac caa ttt tca gag aac gaa ata gtc act atc	480
Ile Tyr Lys Met Ser Tyr Gln Phe Ser Glu Asn Glu Ile Val Thr Ile	
145 150 155 160	
atc aat aga gat cat ttc atg tat gaa cca ata tat gaa cat caa gtc	528
Ile Asn Arg Asp His Phe Met Tyr Glu Pro Ile Tyr Glu His Gln Val	
165 170 175	
tta gat tct gac ttt ctt aaa act atg tta gat aga tac gga ata gtt	576
Leu Asp Ser Asp Phe Leu Lys Thr Met Leu Asp Arg Tyr Gly Ile Val	
180 185 190	
ccc att aat tct ggt ata ata gat gaa tta tgt cca gaa gct ata ata	624
Pro Ile Asn Ser Gly Ile Ile Asp Glu Leu Cys Pro Glu Ala Ile Ile	
195 200 205	
gag ata tta atg gca gta gtt cgt cct agg gac gct atc cgt ttc tta	672
Glu Ile Leu Met Ala Val Val Arg Pro Arg Asp Ala Ile Arg Phe Leu	
210 215 220	
gat ata gtg aat aag aat caa ttg aca gaa gat agt gtc aaa aac tat	720
Asp Ile Val Asn Lys Asn Gln Leu Thr Glu Asp Ser Val Lys Asn Tyr	
225 230 235 240	
atc att aat gat atc aga aga ggt aaa ata gat tat tat att cca tac	768
Ile Ile Asn Asp Ile Arg Arg Gly Lys Ile Asp Tyr Tyr Ile Pro Tyr	
245 250 255	

gtt gaa gat ttt tta gaa gat aga act gaa gac ttg gga ata tat gcg	816
Val Glu Asp Phe Leu Glu Asp Arg Thr Glu Asp Leu Gly Ile Tyr Ala	
260 265 270	
aat ata ttt ttt gag gat gct ata gat att acg aaa cta gac atc aca	864
Asn Ile Phe Phe Glu Asp Ala Ile Asp Ile Thr Lys Leu Asp Ile Thr	
275 280 285	
aag aca gag ttg gaa cat ata tca aaa tac atg aat tat tac act act	912
Lys Thr Glu Leu Glu His Ile Ser Lys Tyr Met Asn Tyr Tyr Thr Thr	
290 295 300	
tat ata gat cac ata gtt aac atc atc tta caa aat aat tat ata gat	960
Tyr Ile Asp His Ile Val Asn Ile Ile Leu Gln Asn Asn Tyr Ile Asp	
305 310 315 320	
atc ttg gca tct ata ata gat tac gtg caa gac gta tta aca gaa gaa	1008
Ile Leu Ala Ser Ile Ile Asp Tyr Val Gln Asp Val Leu Thr Glu Glu	
325 330 335	
tta tgt att aga ata gtt tgc gaa tca aca aac cct gtt ccc gtt aca	1056
Leu Cys Ile Arg Ile Val Cys Glu Ser Thr Asn Pro Val Pro Val Thr	
340 345 350	
tct ctt cct ata cat tct acg tta gta atg gtt atg tgt ata caa atg	1104
Ser Leu Pro Ile His Ser Thr Leu Val Met Val Met Cys Ile Gln Met	
355 360 365	
aaa tat gtc gat ata gtt gaa ttc tta gac gag atc gat atc gat act	1152
Lys Tyr Val Asp Ile Val Glu Phe Leu Asp Glu Ile Asp Ile Asp Thr	
370 375 380	
tta ata gaa aaa gga gca gat ccg ata acc gaa tac aca ttt aca aca	1200
Leu Ile Glu Lys Gly Ala Asp Pro Ile Thr Glu Tyr Thr Phe Thr Thr	
385 390 395 400	
aga tgg tac aat aaa cac aat gat ttg atc act ctt tac att aag aaa	1248
Arg Trp Tyr Asn Lys His Asn Asp Leu Ile Thr Leu Tyr Ile Lys Lys	
405 410 415	
tat gga ttc tgt cca atg atg atg aaa cgg tta atg ttc gaa tat cca	1296
Tyr Gly Phe Cys Pro Met Met Met Lys Arg Leu Met Phe Glu Tyr Pro	
420 425 430	
ttg act aaa gaa gcc agt gat cat tta ctt aaa acc atg gat gaa aac	1344
Leu Thr Lys Glu Ala Ser Asp His Leu Leu Lys Thr Met Asp Glu Asn	
435 440 445	
agg gga gct att atg ttt ttt ccg cgt act att tgc aca ctt cct tat	1392
Arg Gly Ala Ile Met Phe Phe Pro Arg Thr Ile Cys Thr Leu Pro Tyr	
450 455 460	
cta tta tgt tgt aat tat aaa cta att caa aaa cct att cca ttc aaa	1440
Leu Leu Cys Cys Asn Tyr Lys Leu Ile Gln Lys Pro Ile Pro Phe Lys	
465 470 475 480	
gaa gaa aat cgt aac atc gta tat aag aaa aac aac aga gta tta tgc	1488
Glu Glu Asn Arg Asn Ile Val Tyr Lys Lys Asn Asn Arg Val Leu Cys	
485 490 495	

ttt gac tcg ttg gag aac tct gcg ttt aaa agc ctc att aaa ata gat	1536
Phe Asp Ser Leu Glu Asn Ser Ala Phe Lys Ser Leu Ile Lys Ile Asp	
500 505 510	
tct att cca gga tta aaa act tat aac atg aaa gac att aca tac gaa	1584
Ser Ile Pro Gly Leu Lys Thr Tyr Asn Met Lys Asp Ile Thr Tyr Glu	
515 520 525	
aag tct aat aat ata att tgt gtt agg ttt ata cct caa gaa tca att	1632
Lys Ser Asn Asn Ile Ile Cys Val Arg Phe Ile Pro Gln Glu Ser Ile	
530 535 540	
cat aat gaa gag cga aga ata aaa tta cag tta ttc gac att gct aga	1680
His Asn Glu Glu Arg Arg Ile Lys Leu Gln Leu Phe Asp Ile Ala Arg	
545 550 555 560	
ttg gca tcc tat gga cta tat tat att ccc tct aga tat tta tca tcg	1728
Leu Ala Ser Tyr Gly Leu Tyr Tyr Ile Pro Ser Arg Tyr Leu Ser Ser	
565 570 575	
tgg aca cca gta gtg aac atg ata gag gga aga gag tac act aat cca	1776
Trp Thr Pro Val Val Asn Met Ile Glu Gly Arg Glu Tyr Thr Asn Pro	
580 585 590	
caa aaa ata gaa tgt cta gtt att ttg gat tta ttt tca gag gaa ttc	1824
Gln Lys Ile Glu Cys Leu Val Ile Leu Asp Leu Phe Ser Glu Glu Phe	
595 600 605	
ata gaa tat caa aat ctg ggc aat gcg gta tct aat aaa tat gaa ctg	1872
Ile Glu Tyr Gln Asn Leu Gly Asn Ala Val Ser Asn Lys Tyr Glu Leu	
610 615 620	
gaa tat act ata tct aat tat caa gct gcc ata aac tgc cta atg agc	1920
Glu Tyr Thr Ile Ser Asn Tyr Gln Ala Ala Ile Asn Cys Leu Met Ser	
625 630 635 640	
acg tta tta ata tat cta gtt cta gga tca atc aga tcg ata tca aaa	1968
Thr Leu Leu Ile Tyr Leu Val Leu Gly Ser Ile Arg Ser Ile Ser Lys	
645 650 655	
act gaa gat ttt gta tta tct ata tta aat atc ttc tat aaa gga ctg	2016
Thr Glu Asp Phe Val Leu Ser Ile Leu Asn Ile Phe Tyr Lys Gly Leu	
660 665 670	
aaa att aat gaa tta ctt tct gaa cca gta tca gga gtt tgt atc gaa	2064
Lys Ile Asn Glu Leu Leu Ser Glu Pro Val Ser Gly Val Cys Ile Glu	
675 680 685	
tta gat aaa ata aaa gat aga gcg agc tct gga gac agt agt ttt ata	2112
Leu Asp Lys Ile Lys Asp Arg Ala Ser Ser Gly Asp Ser Ser Phe Ile	
690 695 700	
ttt ctt aag aaa aac gag tta tca aaa act cta tcg ctc tgt gaa aaa	2160
Phe Leu Lys Lys Asn Glu Leu Ser Lys Thr Leu Ser Leu Cys Glu Lys	
705 710 715 720	
gtt tgc gta gag acc ata tta gac aat aat cag agt ttt aaa tcc tca	2208
Val Cys Val Glu Thr Ile Leu Asp Asn Asn Gln Ser Phe Lys Ser Ser	

725

730

735

aaa tga
Lys *

2214

<210> 132
<211> 737
<212> PRT
<213> vaccinia virus

<400> 132

Met	Ile	Ser	Val	Thr	Asp	Ile	Arg	Arg	Ala	Phe	Leu	Asp	Asn	Glu	Cys
1				5					10					15	
His	Thr	Ile	Thr	Lys	Ala	Phe	Gly	Tyr	Leu	His	Glu	Asp	Asn	Ala	Ile
			20					25					30		
Ala	Leu	Ile	Lys	Ile	Gly	Phe	His	Pro	Thr	Tyr	Leu	Pro	Lys	Val	Leu
		35					40					45			
Tyr	Asn	Asn	Val	Val	Glu	Phe	Val	Pro	Glu	Lys	Leu	Tyr	Leu	Phe	Lys
	50					55					60				
Pro	Arg	Thr	Val	Ala	Pro	Leu	Asp	Leu	Ile	Ser	Thr	Ile	Thr	Lys	Leu
65					70					75				80	
Lys	Asn	Val	Asp	Lys	Phe	Ala	Ser	His	Ile	Asn	Tyr	His	Lys	Asn	Ser
				85					90					95	
Ile	Leu	Ile	Thr	Gly	Asp	Lys	Ser	Leu	Ile	Val	Lys	Cys	Met	Pro	Tyr
			100					105					110		
Met	Ile	Ile	Ser	Asp	Asp	Asp	Ile	Arg	Phe	Ile	Arg	Glu	Gln	Phe	Val
			115					120				125			
Gly	Thr	Asn	Ser	Ile	Glu	Tyr	Ile	Leu	Ser	Phe	Ile	Asn	Lys	Glu	Ser
	130					135					140				
Ile	Tyr	Lys	Met	Ser	Tyr	Gln	Phe	Ser	Glu	Asn	Glu	Ile	Val	Thr	Ile
145					150					155					160
Ile	Asn	Arg	Asp	His	Phe	Met	Tyr	Glu	Pro	Ile	Tyr	Glu	His	Gln	Val
				165					170					175	
Leu	Asp	Ser	Asp	Phe	Leu	Lys	Thr	Met	Leu	Asp	Arg	Tyr	Gly	Ile	Val
			180					185					190		
Pro	Ile	Asn	Ser	Gly	Ile	Ile	Asp	Glu	Leu	Cys	Pro	Glu	Ala	Ile	Ile
	195						200					205			
Glu	Ile	Leu	Met	Ala	Val	Val	Arg	Pro	Arg	Asp	Ala	Ile	Arg	Phe	Leu
	210					215					220				
Asp	Ile	Val	Asn	Lys	Asn	Gln	Leu	Thr	Glu	Asp	Ser	Val	Lys	Asn	Tyr
225					230					235					240
Ile	Ile	Asn	Asp	Ile	Arg	Arg	Gly	Lys	Ile	Asp	Tyr	Tyr	Ile	Pro	Tyr
				245					250					255	
Val	Glu	Asp	Phe	Leu	Glu	Asp	Arg	Thr	Glu	Asp	Leu	Gly	Ile	Tyr	Ala
			260					265					270		
Asn	Ile	Phe	Phe	Glu	Asp	Ala	Ile	Asp	Ile	Thr	Lys	Leu	Asp	Ile	Thr
		275					280					285			
Lys	Thr	Glu	Leu	Glu	His	Ile	Ser	Lys	Tyr	Met	Asn	Tyr	Tyr	Thr	Thr
	290					295					300				
Tyr	Ile	Asp	His	Ile	Val	Asn	Ile	Ile	Leu	Gln	Asn	Asn	Tyr	Ile	Asp
305					310					315					320
Ile	Leu	Ala	Ser	Ile	Ile	Asp	Tyr	Val	Gln	Asp	Val	Leu	Thr	Glu	Glu
				325					330					335	
Leu	Cys	Ile	Arg	Ile	Val	Cys	Glu	Ser	Thr	Asn	Pro	Val	Pro	Val	Thr
			340					345				350			
Ser	Leu	Pro	Ile	His	Ser	Thr	Leu	Val	Met	Val	Met	Cys	Ile	Gln	Met
		355					360					365			

Lys Tyr Val Asp Ile Val Glu Phe Leu Asp Glu Ile Asp Ile Asp Thr
 370 375 380
 Leu Ile Glu Lys Gly Ala Asp Pro Ile Thr Glu Tyr Thr Phe Thr Thr
 385 390 395 400
 Arg Trp Tyr Asn Lys His Asn Asp Leu Ile Thr Leu Tyr Ile Lys Lys
 405 410 415
 Tyr Gly Phe Cys Pro Met Met Met Lys Arg Leu Met Phe Glu Tyr Pro
 420 425 430
 Leu Thr Lys Glu Ala Ser Asp His Leu Leu Lys Thr Met Asp Glu Asn
 435 440 445
 Arg Gly Ala Ile Met Phe Phe Pro Arg Thr Ile Cys Thr Leu Pro Tyr
 450 455 460
 Leu Leu Cys Cys Asn Tyr Lys Leu Ile Gln Lys Pro Ile Pro Phe Lys
 465 470 475 480
 Glu Glu Asn Arg Asn Ile Val Tyr Lys Lys Asn Asn Arg Val Leu Cys
 485 490 495
 Phe Asp Ser Leu Glu Asn Ser Ala Phe Lys Ser Leu Ile Lys Ile Asp
 500 505 510
 Ser Ile Pro Gly Leu Lys Thr Tyr Asn Met Lys Asp Ile Thr Tyr Glu
 515 520 525
 Lys Ser Asn Asn Ile Ile Cys Val Arg Phe Ile Pro Gln Glu Ser Ile
 530 535 540
 His Asn Glu Glu Arg Arg Ile Lys Leu Gln Leu Phe Asp Ile Ala Arg
 545 550 555 560
 Leu Ala Ser Tyr Gly Leu Tyr Tyr Ile Pro Ser Arg Tyr Leu Ser Ser
 565 570 575
 Trp Thr Pro Val Val Asn Met Ile Glu Gly Arg Glu Tyr Thr Asn Pro
 580 585 590
 Gln Lys Ile Glu Cys Leu Val Ile Leu Asp Leu Phe Ser Glu Glu Phe
 595 600 605
 Ile Glu Tyr Gln Asn Leu Gly Asn Ala Val Ser Asn Lys Tyr Glu Leu
 610 615 620
 Glu Tyr Thr Ile Ser Asn Tyr Gln Ala Ala Ile Asn Cys Leu Met Ser
 625 630 635 640
 Thr Leu Leu Ile Tyr Leu Val Leu Gly Ser Ile Arg Ser Ile Ser Lys
 645 650 655
 Thr Glu Asp Phe Val Leu Ser Ile Leu Asn Ile Phe Tyr Lys Gly Leu
 660 665 670
 Lys Ile Asn Glu Leu Leu Ser Glu Pro Val Ser Gly Val Cys Ile Glu
 675 680 685
 Leu Asp Lys Ile Lys Asp Arg Ala Ser Ser Gly Asp Ser Ser Phe Ile
 690 695 700
 Phe Leu Lys Lys Asn Glu Leu Ser Lys Thr Leu Ser Leu Cys Glu Lys
 705 710 715 720
 Val Cys Val Glu Thr Ile Leu Asp Asn Asn Gln Ser Phe Lys Ser Ser
 725 730 735
 Lys

<210> 133
 <211> 570
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(570)

<400> 133
atg tct aag atc tat att gac gag cgt tct gac gca gag att gtg tgt 48
Met Ser Lys Ile Tyr Ile Asp Glu Arg Ser Asp Ala Glu Ile Val Cys
1 5 10 15

gcg gct att aaa aac att gga atc gaa gga gct act gct gca caa cta 96
Ala Ala Ile Lys Asn Ile Gly Ile Glu Gly Ala Thr Ala Ala Gln Leu
20 25 30

act aga caa ctt aat atg gag aag cga gaa gtt aat aaa gct ctg tac 144
Thr Arg Gln Leu Asn Met Glu Lys Arg Glu Val Asn Lys Ala Leu Tyr
35 40 45

gat ctt caa cgt agt gct atg gtg tac agc tcc gac gat att cct cct 192
Asp Leu Gln Arg Ser Ala Met Val Tyr Ser Ser Asp Asp Ile Pro Pro
50 55 60

cgt tgg ttt atg aca acg gag gcg gat aag ccg gat gct gat gtt atg 240
Arg Trp Phe Met Thr Thr Glu Ala Asp Lys Pro Asp Ala Asp Val Met
65 70 75 80

gct gac gcc ata ata gat gat gta tcc cgc gaa aaa tca atg aga gag 288
Ala Asp Ala Ile Ile Asp Asp Val Ser Arg Glu Lys Ser Met Arg Glu
85 90 95

gat cat aag tct ttt gat gat gtt att ccg gct aaa aaa att att gat 336
Asp His Lys Ser Phe Asp Asp Val Ile Pro Ala Lys Lys Ile Ile Asp
100 105 110

tgg aaa gat gct aac cct gtc acc att att aat gag tac tgc caa ata 384
Trp Lys Asp Ala Asn Pro Val Thr Ile Ile Asn Glu Tyr Cys Gln Ile
115 120 125

act aag aga gat tgg tct ttt cgt att gaa tca gtt ggg cct agt aac 432
Thr Lys Arg Asp Trp Ser Phe Arg Ile Glu Ser Val Gly Pro Ser Asn
130 135 140

tct cct aca ttt tat gcc tgt gta gat atc gac gga aga gta ttc gat 480
Ser Pro Thr Phe Tyr Ala Cys Val Asp Ile Asp Gly Arg Val Phe Asp
145 150 155 160

aag gcc gat gga aaa tct aaa cga gat gct aaa aat aat gca gct aaa 528
Lys Ala Asp Gly Lys Ser Lys Arg Asp Ala Lys Asn Asn Ala Ala Lys
165 170 175

ttg gct gta gat aaa ctt ctt ggg tac gtc atc att aga ttc 570
Leu Ala Val Asp Lys Leu Leu Gly Tyr Val Ile Ile Arg Phe
180 185 190

<210> 134
<211> 190
<212> PRT
<213> vaccinia virus

<400> 134
Met Ser Lys Ile Tyr Ile Asp Glu Arg Ser Asp Ala Glu Ile Val Cys
1 5 10 15

Ala Ala Ile Lys Asn Ile Gly Ile Glu Gly Ala Thr Ala Ala Gln Leu
20 25 30
Thr Arg Gln Leu Asn Met Glu Lys Arg Glu Val Asn Lys Ala Leu Tyr
35 40 45
Asp Leu Gln Arg Ser Ala Met Val Tyr Ser Ser Asp Asp Ile Pro Pro
50 55 60
Arg Trp Phe Met Thr Thr Glu Ala Asp Lys Pro Asp Ala Asp Val Met
65 70 75 80
Ala Asp Ala Ile Ile Asp Asp Val Ser Arg Glu Lys Ser Met Arg Glu
85 90 95
Asp His Lys Ser Phe Asp Asp Val Ile Pro Ala Lys Lys Ile Ile Asp
100 105 110
Trp Lys Asp Ala Asn Pro Val Thr Ile Ile Asn Glu Tyr Cys Gln Ile
115 120 125
Thr Lys Arg Asp Trp Ser Phe Arg Ile Glu Ser Val Gly Pro Ser Asn
130 135 140
Ser Pro Thr Phe Tyr Ala Cys Val Asp Ile Asp Gly Arg Val Phe Asp
145 150 155 160
Lys Ala Asp Gly Lys Ser Lys Arg Asp Ala Lys Asn Asn Ala Ala Lys
165 170 175
Leu Ala Val Asp Lys Leu Leu Gly Tyr Val Ile Ile Arg Phe
180 185 190

<210> 135
<211> 777
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(777)

<400> 135
atg gaa aat gta tac att agt agt tac tca tcc aat gaa caa aca tca 48
Met Glu Asn Val Tyr Ile Ser Ser Tyr Ser Ser Asn Glu Gln Thr Ser
1 5 10 15
atg gcg gta gcc gct act gat atc cga gaa tta cta tca caa tat gtg 96
Met Ala Val Ala Ala Thr Asp Ile Arg Glu Leu Leu Ser Gln Tyr Val
20 25 30
gat gat gcc aac ttg gaa gac tta ata gaa tgg gcc atg gaa aaa tca 144
Asp Asp Ala Asn Leu Glu Asp Leu Ile Glu Trp Ala Met Glu Lys Ser
35 40 45
tca aag tac tac atc aag aat ata ggt aat aca aaa tct aat atc gaa 192
Ser Lys Tyr Tyr Ile Lys Asn Ile Gly Asn Thr Lys Ser Asn Ile Glu
50 55 60
gaa act aaa ttc gaa tca aag aat aat att ggt ata gaa tac tca aag 240
Glu Thr Lys Phe Glu Ser Lys Asn Asn Ile Gly Ile Glu Tyr Ser Lys
65 70 75 80
gat tcc aga aac aaa cta tcg tat aga aat aaa ccg tct att gcc aca 288
Asp Ser Arg Asn Lys Leu Ser Tyr Arg Asn Lys Pro Ser Ile Ala Thr
85 90 95
aat ttg gaa tat aaa aca cta tgt gat atg att aag ggt act agc ggc 336

Asn	Leu	Glu	Tyr	Lys	Thr	Leu	Cys	Asp	Met	Ile	Lys	Gly	Thr	Ser	Gly		
			100					105					110				
acc	gaa	aaa	gaa	ttc	ctt	cgc	tat	ctc	tta	ttc	ggt	ata	aaa	tgc	att	384	
Thr	Glu	Lys	Glu	Phe	Leu	Arg	Tyr	Leu	Leu	Phe	Gly	Ile	Lys	Cys	Ile		
		115					120					125					
aag	aaa	gga	gta	gaa	tac	aat	ata	gat	aaa	ata	aag	gat	gtg	agt	tac	432	
Lys	Lys	Gly	Val	Glu	Tyr	Asn	Ile	Asp	Lys	Ile	Lys	Asp	Val	Ser	Tyr		
		130				135					140						
aac	gat	tat	ttt	aac	gtt	ctc	gac	gag	aaa	tac	aat	aca	ccg	tgt	cct	480	
Asn	Asp	Tyr	Phe	Asn	Val	Leu	Asp	Glu	Lys	Tyr	Asn	Thr	Pro	Cys	Pro		
145					150					155					160		
aac	tgt	aaa	agt	agg	aat	act	acg	ccg	atg	atg	att	caa	act	aga	gcc	528	
Asn	Cys	Lys	Ser	Arg	Asn	Thr	Thr	Pro	Met	Met	Ile	Gln	Thr	Arg	Ala		
				165					170					175			
gct	gac	gaa	cct	cca	cta	gtt	aga	cat	gcg	tgt	aga	gat	tgc	aaa	caa	576	
Ala	Asp	Glu	Pro	Pro	Leu	Val	Arg	His	Ala	Cys	Arg	Asp	Cys	Lys	Gln		
			180					185					190				
cac	ttt	aag	cct	ccc	aaa	ttt	aga	gca	ttt	cgc	aat	ctt	aat	gtt	aca	624	
His	Phe	Lys	Pro	Pro	Lys	Phe	Arg	Ala	Phe	Arg	Asn	Leu	Asn	Val	Thr		
		195					200					205					
acg	caa	tcg	ata	cat	gaa	aac	aag	gaa	ata	aca	gag	att	ctt	cca	gat	672	
Thr	Gln	Ser	Ile	His	Glu	Asn	Lys	Glu	Ile	Thr	Glu	Ile	Leu	Pro	Asp		
		210				215					220						
aat	aat	cca	tct	cct	cca	gaa	tct	cca	gaa	cca	gca	tca	cct	ata	gat	720	
Asn	Asn	Pro	Ser	Pro	Pro	Glu	Ser	Pro	Glu	Pro	Ala	Ser	Pro	Ile	Asp		
225					230					235					240		
gac	ggg	tta	atc	aga	tcc	aca	ttc	gat	agg	aac	gac	gaa	cca	cca	gag	768	
Asp	Gly	Leu	Ile	Arg	Ser	Thr	Phe	Asp	Arg	Asn	Asp	Glu	Pro	Pro	Glu		
				245				250						255			
gat	gat	gaa														777	
Asp	Asp	Glu															

<210> 136
 <211> 259
 <212> PRT
 <213> vaccinia virus

<400> 136
 Met Glu Asn Val Tyr Ile Ser Ser Tyr Ser Ser Asn Glu Gln Thr Ser
 1 5 10 15
 Met Ala Val Ala Ala Thr Asp Ile Arg Glu Leu Leu Ser Gln Tyr Val
 20 25 30
 Asp Asp Ala Asn Leu Glu Asp Leu Ile Glu Trp Ala Met Glu Lys Ser
 35 40 45
 Ser Lys Tyr Tyr Ile Lys Asn Ile Gly Asn Thr Lys Ser Asn Ile Glu
 50 55 60
 Glu Thr Lys Phe Glu Ser Lys Asn Asn Ile Gly Ile Glu Tyr Ser Lys

65	Asp	Ser	Arg	Asn	Lys	Leu	Ser	Tyr	Arg	Asn	Lys	Pro	Ser	Ile	Ala	Thr	80
					85					90					95		
	Asn	Leu	Glu	Tyr	Lys	Thr	Leu	Cys	Asp	Met	Ile	Lys	Gly	Thr	Ser	Gly	
			100						105					110			
	Thr	Glu	Lys	Glu	Phe	Leu	Arg	Tyr	Leu	Leu	Phe	Gly	Ile	Lys	Cys	Ile	
			115					120					125				
	Lys	Lys	Gly	Val	Glu	Tyr	Asn	Ile	Asp	Lys	Ile	Lys	Asp	Val	Ser	Tyr	
		130					135					140					
	Asn	Asp	Tyr	Phe	Asn	Val	Leu	Asp	Glu	Lys	Tyr	Asn	Thr	Pro	Cys	Pro	
	145					150					155					160	
	Asn	Cys	Lys	Ser	Arg	Asn	Thr	Thr	Pro	Met	Met	Ile	Gln	Thr	Arg	Ala	
				165						170					175		
	Ala	Asp	Glu	Pro	Pro	Leu	Val	Arg	His	Ala	Cys	Arg	Asp	Cys	Lys	Gln	
			180						185					190			
	His	Phe	Lys	Pro	Pro	Lys	Phe	Arg	Ala	Phe	Arg	Asn	Leu	Asn	Val	Thr	
		195						200					205				
	Thr	Gln	Ser	Ile	His	Glu	Asn	Lys	Glu	Ile	Thr	Glu	Ile	Leu	Pro	Asp	
		210					215					220					
	Asn	Asn	Pro	Ser	Pro	Pro	Glu	Ser	Pro	Glu	Pro	Ala	Ser	Pro	Ile	Asp	
	225					230					235					240	
	Asp	Gly	Leu	Ile	Arg	Ser	Thr	Phe	Asp	Arg	Asn	Asp	Glu	Pro	Pro	Glu	
				245						250					255		
	Asp	Asp	Glu														

<210> 137
 <211> 570
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(570)

<400> 137	
atg tta ata att gta ttg tgg tta tac ggc tac aat ttc ata atg agt	48
Met Leu Ile Ile Val Leu Trp Leu Tyr Gly Tyr Asn Phe Ile Met Ser	
1 5 10 15	
gga agt cag tgt ccg atg atc aat gac gat agc ttt act ctg aaa aga	96
Gly Ser Gln Cys Pro Met Ile Asn Asp Asp Ser Phe Thr Leu Lys Arg	
20 25 30	
aag tat caa atc gat agt gcg gag tca aca atg aaa atg gat aag aag	144
Lys Tyr Gln Ile Asp Ser Ala Glu Ser Thr Met Lys Met Asp Lys Lys	
35 40 45	
agg aca aag ttt cag aat aga gcc aaa atg gta aaa gaa ata aat cag	192
Arg Thr Lys Phe Gln Asn Arg Ala Lys Met Val Lys Glu Ile Asn Gln	
50 55 60	
aca ata aga gca gca caa act cat tac gag aca ttg aaa cta gga tac	240
Thr Ile Arg Ala Ala Gln Thr His Tyr Glu Thr Leu Lys Leu Gly Tyr	
65 70 75 80	
ata aaa ttt aag aga atg att atg act act act cta gaa gat ata gca	288
Ile Lys Phe Lys Arg Met Ile Met Thr Thr Thr Leu Glu Asp Ile Ala	

85										90					95					
cca	tct	att	cca	aat	aat	cag	aaa	act	tat	aaa	cta	ttc	tcg	gac	att	336				
Pro	Ser	Ile	Pro	Asn	Asn	Gln	Lys	Thr	Tyr	Lys	Leu	Phe	Ser	Asp	Ile					
			100					105					110							
tca	gcc	atc	ggc	aaa	gca	tca	cgg	aat	cca	agt	aag	atg	gta	tat	gct	384				
Ser	Ala	Ile	Gly	Lys	Ala	Ser	Arg	Asn	Pro	Ser	Lys	Met	Val	Tyr	Ala					
		115					120					125								
ctg	ctg	ctt	tac	atg	ttt	ccc	aat	ttg	ttt	gga	gat	gac	cat	aga	ttc	432				
Leu	Leu	Leu	Tyr	Met	Phe	Pro	Asn	Leu	Phe	Gly	Asp	Asp	His	Arg	Phe					
		130				135					140									
att	cgt	tat	aga	atg	cat	cca	atg	agt	aaa	atc	aaa	cac	aag	atc	ttc	480				
Ile	Arg	Tyr	Arg	Met	His	Pro	Met	Ser	Lys	Ile	Lys	His	Lys	Ile	Phe					
		145			150					155					160					
tct	cct	ttc	aaa	ctt	aat	ctt	att	aga	ata	tta	gtg	gaa	gaa	aga	ttc	528				
Ser	Pro	Phe	Lys	Leu	Asn	Leu	Ile	Arg	Ile	Leu	Val	Glu	Glu	Arg	Phe					
			165					170						175						
tat	aat	aat	gaa	tgc	aga	tct	aat	aaa	tgg	aac	aca	agt	tga			570				
Tyr	Asn	Asn	Glu	Cys	Arg	Ser	Asn	Lys	Trp	Asn	Thr	Ser	*							
			180					185												

<210> 138
 <211> 189
 <212> PRT
 <213> vaccinia virus

<400> 138

Met	Leu	Ile	Ile	Val	Leu	Trp	Leu	Tyr	Gly	Tyr	Asn	Phe	Ile	Met	Ser
1				5					10					15	
Gly	Ser	Gln	Cys	Pro	Met	Ile	Asn	Asp	Asp	Ser	Phe	Thr	Leu	Lys	Arg
		20						25					30		
Lys	Tyr	Gln	Ile	Asp	Ser	Ala	Glu	Ser	Thr	Met	Lys	Met	Asp	Lys	Lys
		35					40					45			
Arg	Thr	Lys	Phe	Gln	Asn	Arg	Ala	Lys	Met	Val	Lys	Glu	Ile	Asn	Gln
		50			55					60					
Thr	Ile	Arg	Ala	Ala	Gln	Thr	His	Tyr	Glu	Thr	Leu	Lys	Leu	Gly	Tyr
65					70				75					80	
Ile	Lys	Phe	Lys	Arg	Met	Ile	Met	Thr	Thr	Thr	Leu	Glu	Asp	Ile	Ala
				85					90					95	
Pro	Ser	Ile	Pro	Asn	Asn	Gln	Lys	Thr	Tyr	Lys	Leu	Phe	Ser	Asp	Ile
			100					105					110		
Ser	Ala	Ile	Gly	Lys	Ala	Ser	Arg	Asn	Pro	Ser	Lys	Met	Val	Tyr	Ala
		115					120					125			
Leu	Leu	Leu	Tyr	Met	Phe	Pro	Asn	Leu	Phe	Gly	Asp	Asp	His	Arg	Phe
		130				135					140				
Ile	Arg	Tyr	Arg	Met	His	Pro	Met	Ser	Lys	Ile	Lys	His	Lys	Ile	Phe
145					150				155					160	
Ser	Pro	Phe	Lys	Leu	Asn	Leu	Ile	Arg	Ile	Leu	Val	Glu	Glu	Arg	Phe
				165				170						175	
Tyr	Asn	Asn	Glu	Cys	Arg	Ser	Asn	Lys	Trp	Asn	Thr	Ser			
			180					185							

<210> 139
 <211> 450
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(450)

<400> 139
 atg aat gca gat cta ata aat gga aca caa gtt gat aaa atg ttg ata 48
 Met Asn Ala Asp Leu Ile Asn Gly Thr Gln Val Asp Lys Met Leu Ile
 1 5 10 15
 gct gaa tct gat aaa tat aca ata gat gca agg tat aac cta aaa ccc 96
 Ala Glu Ser Asp Lys Tyr Thr Ile Asp Ala Arg Tyr Asn Leu Lys Pro
 20 25 30
 atg tat aga atc aag gga gaa tct gaa gaa gat acc ctc ttc atc aaa 144
 Met Tyr Arg Ile Lys Gly Glu Ser Glu Glu Asp Thr Leu Phe Ile Lys
 35 40 45
 cag atg gta gaa caa tgt gtg aca tcc cag gaa ttg gtg gaa aaa gtg 192
 Gln Met Val Glu Gln Cys Val Thr Ser Gln Glu Leu Val Glu Lys Val
 50 55 60
 ttg aag ata ctg ttt aga gat ttg ttc aag agt gga gaa tac aaa gca 240
 Leu Lys Ile Leu Phe Arg Asp Leu Phe Lys Ser Gly Glu Tyr Lys Ala
 65 70 75 80
 tac aga tac gat gat gat gta gaa aat gga ttt att gga ttg gat aca 288
 Tyr Arg Tyr Asp Asp Asp Val Glu Asn Gly Phe Ile Gly Leu Asp Thr
 85 90 95
 cta aaa tta aac att gtt cat gat ata gtt gaa cca tgt atg cct gtt 336
 Leu Lys Leu Asn Ile Val His Asp Ile Val Glu Pro Cys Met Pro Val
 100 105 110
 cgt agg cca gtg gct aag ata ctg tgt aaa gaa atg gta aat aaa tac 384
 Arg Arg Pro Val Ala Lys Ile Leu Cys Lys Glu Met Val Asn Lys Tyr
 115 120 125
 ttt gag aat ccg cta cat att att ggt aaa aat ctt caa gag tgc att 432
 Phe Glu Asn Pro Leu His Ile Ile Gly Lys Asn Leu Gln Glu Cys Ile
 130 135 140
 gac ttt gtt agt gaa tag 450
 Asp Phe Val Ser Glu *
 145

<210> 140
 <211> 149
 <212> PRT
 <213> vaccinia virus

<400> 140
 Met Asn Ala Asp Leu Ile Asn Gly Thr Gln Val Asp Lys Met Leu Ile
 1 5 10 15

Ala Glu Ser Asp Lys Tyr Thr Ile Asp Ala Arg Tyr Asn Leu Lys Pro
20 25 30
Met Tyr Arg Ile Lys Gly Glu Ser Glu Glu Asp Thr Leu Phe Ile Lys
35 40 45
Gln Met Val Glu Gln Cys Val Thr Ser Gln Glu Leu Val Glu Lys Val
50 55 60
Leu Lys Ile Leu Phe Arg Asp Leu Phe Lys Ser Gly Glu Tyr Lys Ala
65 70 75 80
Tyr Arg Tyr Asp Asp Asp Val Glu Asn Gly Phe Ile Gly Leu Asp Thr
85 90 95
Leu Lys Leu Asn Ile Val His Asp Ile Val Glu Pro Cys Met Pro Val
100 105 110
Arg Arg Pro Val Ala Lys Ile Leu Cys Lys Glu Met Val Asn Lys Tyr
115 120 125
Phe Glu Asn Pro Leu His Ile Ile Gly Lys Asn Leu Gln Glu Cys Ile
130 135 140
Asp Phe Val Ser Glu
145

<210> 141
<211> 1704
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(1704)

<400> 141
atg gat ttt att cgt aga aag tat ctt ata tac aca gta gaa aat aat 48
Met Asp Phe Ile Arg Arg Lys Tyr Leu Ile Tyr Thr Val Glu Asn Asn
1 5 10 15
ata gat ttt tta aag gat gat aca tta agt aaa gta aac aat ttt acc 96
Ile Asp Phe Leu Lys Asp Asp Thr Leu Ser Lys Val Asn Asn Phe Thr
20 25 30
ctc aat cat gta cta gct ctc aag tat cta gtt agc aat ttt cct caa 144
Leu Asn His Val Leu Ala Leu Lys Tyr Leu Val Ser Asn Phe Pro Gln
35 40 45
cac gtt att act aag gat gta tta gct aat acc aat ttt ttt gtt ttc 192
His Val Ile Thr Lys Asp Val Leu Ala Asn Thr Asn Phe Phe Val Phe
50 55 60
ata cat atg gta cga tgt tgt aaa gtg tac gaa gcg gtt tta cga cac 240
Ile His Met Val Arg Cys Cys Lys Val Tyr Glu Ala Val Leu Arg His
65 70 75 80
gca ttt gat gca ccc acg ttg tac gtt aaa gca ttg act aag aat tat 288
Ala Phe Asp Ala Pro Thr Leu Tyr Val Lys Ala Leu Thr Lys Asn Tyr
85 90 95
tta tcg ttt agt aac gca ata caa tcg tac aag gaa acc gtg cat aaa 336
Leu Ser Phe Ser Asn Ala Ile Gln Ser Tyr Lys Glu Thr Val His Lys
100 105 110
cta aca caa gat gaa aaa ttt tta gag gtt gcc gaa tac atg gac gaa 384

Leu Thr Gln Asp Glu Lys Phe Leu Glu Val Ala Glu Tyr Met Asp Glu	
115 120 125	
tta gga gaa ctt ata ggc gta aat tat gac tta gtt ctt aat cca tta	432
Leu Gly Glu Leu Ile Gly Val Asn Tyr Asp Leu Val Leu Asn Pro Leu	
130 135 140	
ttt cac gga ggg gaa ccc atc aaa gat atg gaa atc att ttt tta aaa	480
Phe His Gly Gly Glu Pro Ile Lys Asp Met Glu Ile Ile Phe Leu Lys	
145 150 155 160	
ctg ttt aag aaa aca gac ttc aaa gtt gtt aaa aaa tta agt gtt ata	528
Leu Phe Lys Lys Thr Asp Phe Lys Val Val Lys Lys Leu Ser Val Ile	
165 170 175	
aga tta ctt att tgg gct tac cta agc aag aaa gat aca ggc ata gag	576
Arg Leu Leu Ile Trp Ala Tyr Leu Ser Lys Lys Asp Thr Gly Ile Glu	
180 185 190	
ttt gcg gat aat gat aga caa gat ata tac act cta ttt caa caa act	624
Phe Ala Asp Asn Asp Arg Gln Asp Ile Tyr Thr Leu Phe Gln Gln Thr	
195 200 205	
ggt aga ata gtc cat agc aat cta aca gaa acg ttt aga gat tat atc	672
Gly Arg Ile Val His Ser Asn Leu Thr Glu Thr Phe Arg Asp Tyr Ile	
210 215 220	
ttt ccc gga gat aag act agc tat tgg gtg tgg tta aac gaa agt ata	720
Phe Pro Gly Asp Lys Thr Ser Tyr Trp Val Trp Leu Asn Glu Ser Ile	
225 230 235 240	
gct aat gat gcg gat att gtt ctt aat aga cac gcc att acc atg tat	768
Ala Asn Asp Ala Asp Ile Val Leu Asn Arg His Ala Ile Thr Met Tyr	
245 250 255	
gat aaa att ctt agt tat ata tac tct gag ata aaa caa gga cgc gtt	816
Asp Lys Ile Leu Ser Tyr Ile Tyr Ser Glu Ile Lys Gln Gly Arg Val	
260 265 270	
aat aaa aac atg ctt aag tta gtt tat atc ttt gag cct gaa aaa gat	864
Asn Lys Asn Met Leu Lys Leu Val Tyr Ile Phe Glu Pro Glu Lys Asp	
275 280 285	
atc aga gaa ctt ctg cta gaa atc ata tat gat att cct gga gat atc	912
Ile Arg Glu Leu Leu Leu Glu Ile Ile Tyr Asp Ile Pro Gly Asp Ile	
290 295 300	
cta tct att att gat gca aaa aac gac gat tgg aaa aaa tat ttt att	960
Leu Ser Ile Ile Asp Ala Lys Asn Asp Asp Trp Lys Lys Tyr Phe Ile	
305 310 315 320	
agt ttt tat aaa gct aat ttt att aac ggt aat aca ttt att agt gat	1008
Ser Phe Tyr Lys Ala Asn Phe Ile Asn Gly Asn Thr Phe Ile Ser Asp	
325 330 335	
aaa acg ttt aac gag gac tta ttc aga gtt gtt gtt caa ata aat ccc	1056
Lys Thr Phe Asn Glu Asp Leu Phe Arg Val Val Val Gln Ile Asn Pro	
340 345 350	

gaa tat ttc gat aat gaa cga att atg tct tta ttc tct acg agt gct	1104
Glu Tyr Phe Asp Asn Glu Arg Ile Met Ser Leu Phe Ser Thr Ser Ala	
355 360 365	
gcg gac att aaa cga ttt gat gag tta gat att aat aac agt tat ata	1152
Ala Asp Ile Lys Arg Phe Asp Glu Leu Asp Ile Asn Asn Ser Tyr Ile	
370 375 380	
tct aat ata att tat gag gtg aac gat atc aca tta gat aca atg gat	1200
Ser Asn Ile Ile Tyr Glu Val Asn Asp Ile Thr Leu Asp Thr Met Asp	
385 390 395 400	
gat atg aag aag tgt caa atc ttt aac gag gat acg tcg tat tat gtt	1248
Asp Met Lys Lys Cys Gln Ile Phe Asn Glu Asp Thr Ser Tyr Tyr Val	
405 410 415	
aag gaa tac aat aca tac ctg ttt ttg cac gag tcg gat ccc atg gtc	1296
Lys Glu Tyr Asn Thr Tyr Leu Phe Leu His Glu Ser Asp Pro Met Val	
420 425 430	
ata gag aac gga ata cta aag aaa ctg tca tct ata aaa tcc aag agt	1344
Ile Glu Asn Gly Ile Leu Lys Lys Leu Ser Ser Ile Lys Ser Lys Ser	
435 440 445	
aga cgg ctg aac ttg ttt agc aaa aac att tta aaa tat tat tta gac	1392
Arg Arg Leu Asn Leu Phe Ser Lys Asn Ile Leu Lys Tyr Tyr Leu Asp	
450 455 460	
gga caa ttg gct cgt cta ggt ctt gtg tta gat gat tat aaa gga gac	1440
Gly Gln Leu Ala Arg Leu Gly Leu Val Leu Asp Asp Tyr Lys Gly Asp	
465 470 475 480	
ttg tta gtt aaa atg ata aac cat ctt aag tct gtg gag gat gta tcc	1488
Leu Leu Val Lys Met Ile Asn His Leu Lys Ser Val Glu Asp Val Ser	
485 490 495	
gca ttc gtt cga ttt tct aca gat aaa aac cct agt att ctt cca tcg	1536
Ala Phe Val Arg Phe Ser Thr Asp Lys Asn Pro Ser Ile Leu Pro Ser	
500 505 510	
cta atc aaa act att tta gct agt tat aat att tcc atc atc gtc tta	1584
Leu Ile Lys Thr Ile Leu Ala Ser Tyr Asn Ile Ser Ile Ile Val Leu	
515 520 525	
ttt caa agg ttt ttg aga gat aat cta tat cat gta gaa gaa ttc ttg	1632
Phe Gln Arg Phe Leu Arg Asp Asn Leu Tyr His Val Glu Glu Phe Leu	
530 535 540	
gat aaa agc atc cat cta acc aag acg gat aag aaa tat ata ctt caa	1680
Asp Lys Ser Ile His Leu Thr Lys Thr Asp Lys Lys Tyr Ile Leu Gln	
545 550 555 560	
ttg ata aga cac ggt aga tca tag	1704
Leu Ile Arg His Gly Arg Ser *	
565	

<210> 142

<211> 567

<212> PRT

<213> vaccinia virus

<400> 142

Met	Asp	Phe	Ile	Arg	Arg	Lys	Tyr	Leu	Ile	Tyr	Thr	Val	Glu	Asn	Asn	
1				5					10					15		
Ile	Asp	Phe	Leu	Lys	Asp	Asp	Thr	Leu	Ser	Lys	Val	Asn	Asn	Phe	Thr	
			20					25					30			
Leu	Asn	His	Val	Leu	Ala	Leu	Lys	Tyr	Leu	Val	Ser	Asn	Phe	Pro	Gln	
		35					40					45				
His	Val	Ile	Thr	Lys	Asp	Val	Leu	Ala	Asn	Thr	Asn	Phe	Phe	Val	Phe	
	50					55					60					
Ile	His	Met	Val	Arg	Cys	Cys	Lys	Val	Tyr	Glu	Ala	Val	Leu	Arg	His	
65					70					75					80	
Ala	Phe	Asp	Ala	Pro	Thr	Leu	Tyr	Val	Lys	Ala	Leu	Thr	Lys	Asn	Tyr	
				85					90					95		
Leu	Ser	Phe	Ser	Asn	Ala	Ile	Gln	Ser	Tyr	Lys	Glu	Thr	Val	His	Lys	
			100					105					110			
Leu	Thr	Gln	Asp	Glu	Lys	Phe	Leu	Glu	Val	Ala	Glu	Tyr	Met	Asp	Glu	
		115					120					125				
Leu	Gly	Glu	Leu	Ile	Gly	Val	Asn	Tyr	Asp	Leu	Val	Leu	Asn	Pro	Leu	
	130					135					140					
Phe	His	Gly	Gly	Glu	Pro	Ile	Lys	Asp	Met	Glu	Ile	Ile	Phe	Leu	Lys	
145					150					155					160	
Leu	Phe	Lys	Lys	Thr	Asp	Phe	Lys	Val	Val	Lys	Lys	Leu	Ser	Val	Ile	
				165				170						175		
Arg	Leu	Leu	Ile	Trp	Ala	Tyr	Leu	Ser	Lys	Lys	Asp	Thr	Gly	Ile	Glu	
			180					185					190			
Phe	Ala	Asp	Asn	Asp	Arg	Gln	Asp	Ile	Tyr	Thr	Leu	Phe	Gln	Gln	Thr	
		195					200					205				
Gly	Arg	Ile	Val	His	Ser	Asn	Leu	Thr	Glu	Thr	Phe	Arg	Asp	Tyr	Ile	
	210					215					220					
Phe	Pro	Gly	Asp	Lys	Thr	Ser	Tyr	Trp	Val	Trp	Leu	Asn	Glu	Ser	Ile	
225					230					235					240	
Ala	Asn	Asp	Ala	Asp	Ile	Val	Leu	Asn	Arg	His	Ala	Ile	Thr	Met	Tyr	
				245					250					255		
Asp	Lys	Ile	Leu	Ser	Tyr	Ile	Tyr	Ser	Glu	Ile	Lys	Gln	Gly	Arg	Val	
			260					265					270			
Asn	Lys	Asn	Met	Leu	Lys	Leu	Val	Tyr	Ile	Phe	Glu	Pro	Glu	Lys	Asp	
		275					280					285				
Ile	Arg	Glu	Leu	Leu	Leu	Glu	Ile	Ile	Tyr	Asp	Ile	Pro	Gly	Asp	Ile	
	290					295					300					
Leu	Ser	Ile	Ile	Asp	Ala	Lys	Asn	Asp	Asp	Trp	Lys	Lys	Tyr	Phe	Ile	
305					310					315					320	
Ser	Phe	Tyr	Lys	Ala	Asn	Phe	Ile	Asn	Gly	Asn	Thr	Phe	Ile	Ser	Asp	
				325					330					335		
Lys	Thr	Phe	Asn	Glu	Asp	Leu	Phe	Arg	Val	Val	Val	Gln	Ile	Asn	Pro	
			340					345					350			
Glu	Tyr	Phe	Asp	Asn	Glu	Arg	Ile	Met	Ser	Leu	Phe	Ser	Thr	Ser	Ala	
		355					360					365				
Ala	Asp	Ile	Lys	Arg	Phe	Asp	Glu	Leu	Asp	Ile	Asn	Asn	Ser	Tyr	Ile	
	370					375					380					
Ser	Asn	Ile	Ile	Tyr	Glu	Val	Asn	Asp	Ile	Thr	Leu	Asp	Thr	Met	Asp	
385					390					395					400	
Asp	Met	Lys	Lys	Cys	Gln	Ile	Phe	Asn	Glu	Asp	Thr	Ser	Tyr	Tyr	Val	
				405					410					415		
Lys	Glu	Tyr	Asn	Thr	Tyr	Leu	Phe	Leu	His	Glu	Ser	Asp	Pro	Met	Val	
			420					425					430			
Ile	Glu	Asn	Gly	Ile	Leu	Lys	Lys	Leu	Ser	Ser	Ile	Lys	Ser	Lys	Ser	

		435					440					445					
Arg	Arg	Leu	Asn	Leu	Phe	Ser	Lys	Asn	Ile	Leu	Lys	Tyr	Tyr	Leu	Asp		
	450					455					460						
Gly	Gln	Leu	Ala	Arg	Leu	Gly	Leu	Val	Leu	Asp	Asp	Tyr	Lys	Gly	Asp		
465					470					475					480		
Leu	Leu	Val	Lys	Met	Ile	Asn	His	Leu	Lys	Ser	Val	Glu	Asp	Val	Ser		
				485					490					495			
Ala	Phe	Val	Arg	Phe	Ser	Thr	Asp	Lys	Asn	Pro	Ser	Ile	Leu	Pro	Ser		
			500					505					510				
Leu	Ile	Lys	Thr	Ile	Leu	Ala	Ser	Tyr	Asn	Ile	Ser	Ile	Ile	Val	Leu		
		515					520					525					
Phe	Gln	Arg	Phe	Leu	Arg	Asp	Asn	Leu	Tyr	His	Val	Glu	Glu	Phe	Leu		
	530					535					540						
Asp	Lys	Ser	Ile	His	Leu	Thr	Lys	Thr	Asp	Lys	Lys	Tyr	Ile	Leu	Gln		
545					550					555					560		
Leu	Ile	Arg	His	Gly	Arg	Ser											
				565													

<210> 143
 <211> 501
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(501)

<400> 143	
atg gga act gct gca aca att cag act ccc acc aaa tta atg aat aaa	48
Met Gly Thr Ala Ala Thr Ile Gln Thr Pro Thr Lys Leu Met Asn Lys	
1 5 10 15	
gaa aat gca gaa atg att ttg gaa aaa att gtt gat cat ata gtt atg	96
Glu Asn Ala Glu Met Ile Leu Glu Lys Ile Val Asp His Ile Val Met	
20 25 30	
tat att agt gac gaa tca agt gat tca gaa aat aat cct gaa tat att	144
Tyr Ile Ser Asp Glu Ser Ser Asp Ser Glu Asn Asn Pro Glu Tyr Ile	
35 40 45	
gat ttt cgt aac aga tac gaa gac tat aga tct ctc att ata aaa agt	192
Asp Phe Arg Asn Arg Tyr Glu Asp Tyr Arg Ser Leu Ile Ile Lys Ser	
50 55 60	
gat cac gag ttt gta aag cta tgt aaa aat cat gcg gag aaa agt tct	240
Asp His Glu Phe Val Lys Leu Cys Lys Asn His Ala Glu Lys Ser Ser	
65 70 75 80	
cca gaa acg caa caa atg att atc aaa cac ata tac gaa caa tat ctt	288
Pro Glu Thr Gln Gln Met Ile Ile Lys His Ile Tyr Glu Gln Tyr Leu	
85 90 95	
att cca gta tct gaa gta cta tta aaa cct ata atg tcc atg ggt gac	336
Ile Pro Val Ser Glu Val Leu Leu Lys Pro Ile Met Ser Met Gly Asp	
100 105 110	
ata att aca tat aac gga tgt aaa gac aat gaa tgg atg cta gaa caa	384
Ile Ile Thr Tyr Asn Gly Cys Lys Asp Asn Glu Trp Met Leu Glu Gln	

115	120	125	
ctc tct acc cta aac ttt aac aat ctc cgc aca tgg aac tca tgt agc			432
Leu Ser Thr Leu Asn Phe Asn Asn Leu Arg Thr Trp Asn Ser Cys Ser			
130	135	140	
ata ggc aat gta acg cgt ctg ttt tat aca ttt ttt agt tat ctg atg			480
Ile Gly Asn Val Thr Arg Leu Phe Tyr Thr Phe Phe Ser Tyr Leu Met			
145	150	155	160
aaa gat aaa cta aat ata taa			501
Lys Asp Lys Leu Asn Ile *			
165			

<210> 144
 <211> 166
 <212> PRT
 <213> vaccinia virus

<400> 144

Met Gly Thr Ala Ala Thr Ile Gln Thr Pro Thr Lys Leu Met Asn Lys			
1	5	10	15
Glu Asn Ala Glu Met Ile Leu Glu Lys Ile Val Asp His Ile Val Met			
20	25	30	
Tyr Ile Ser Asp Glu Ser Ser Asp Ser Glu Asn Asn Pro Glu Tyr Ile			
35	40	45	
Asp Phe Arg Asn Arg Tyr Glu Asp Tyr Arg Ser Leu Ile Ile Lys Ser			
50	55	60	
Asp His Glu Phe Val Lys Leu Cys Lys Asn His Ala Glu Lys Ser Ser			
65	70	75	80
Pro Glu Thr Gln Gln Met Ile Ile Lys His Ile Tyr Glu Gln Tyr Leu			
85	90	95	
Ile Pro Val Ser Glu Val Leu Leu Lys Pro Ile Met Ser Met Gly Asp			
100	105	110	
Ile Ile Thr Tyr Asn Gly Cys Lys Asp Asn Glu Trp Met Leu Glu Gln			
115	120	125	
Leu Ser Thr Leu Asn Phe Asn Asn Leu Arg Thr Trp Asn Ser Cys Ser			
130	135	140	
Ile Gly Asn Val Thr Arg Leu Phe Tyr Thr Phe Phe Ser Tyr Leu Met			
145	150	155	160
Lys Asp Lys Leu Asn Ile			
165			

<210> 145
 <211> 822
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(822)

<400> 145

atg gct gcc acc gtt ccg cgt ttt gac gac gtg tac aaa aat gca caa			48
Met Ala Ala Thr Val Pro Arg Phe Asp Asp Val Tyr Lys Asn Ala Gln			
1	5	10	15

aga	aga	att	cta	gat	caa	gaa	aca	ttt	ttt	agt	aga	ggt	cta	agt	aga	96
Arg	Arg	Ile	Leu	Asp	Gln	Glu	Thr	Phe	Phe	Ser	Arg	Gly	Leu	Ser	Arg	
		20						25					30			
ccg	tta	atg	aaa	aac	aca	tat	cta	ttt	gat	aat	tac	gcg	tat	gga	tg	144
Pro	Leu	Met	Lys	Asn	Thr	Tyr	Leu	Phe	Asp	Asn	Tyr	Ala	Tyr	Gly	Trp	
		35					40					45				
ata	cca	gaa	act	gca	att	tg	agt	agt	aga	tac	gca	aac	cta	gat	gct	192
Ile	Pro	Glu	Thr	Ala	Ile	Trp	Ser	Ser	Arg	Tyr	Ala	Asn	Leu	Asp	Ala	
	50					55					60					
agt	gac	tat	tat	ccc	att	tcg	ttg	gga	tta	ctt	aaa	aag	ttt	gag	ttt	240
Ser	Asp	Tyr	Tyr	Pro	Ile	Ser	Leu	Gly	Leu	Leu	Lys	Lys	Phe	Glu	Phe	
65					70					75					80	
ctc	atg	tct	cta	tat	aaa	ggt	cct	att	ccc	gta	tat	gaa	gaa	aaa	gta	288
Leu	Met	Ser	Leu	Tyr	Lys	Gly	Pro	Ile	Pro	Val	Tyr	Glu	Glu	Lys	Val	
				85					90					95		
aat	act	gaa	ttc	att	gct	aat	gga	tct	ttc	tcc	ggt	aga	tat	gta	tca	336
Asn	Thr	Glu	Phe	Ile	Ala	Asn	Gly	Ser	Phe	Ser	Gly	Arg	Tyr	Val	Ser	
			100					105					110			
tat	ctt	aga	aag	ttt	tct	gct	ctt	cca	aca	aac	gag	ttt	att	agt	ttt	384
Tyr	Leu	Arg	Lys	Phe	Ser	Ala	Leu	Pro	Thr	Asn	Glu	Phe	Ile	Ser	Phe	
		115					120					125				
ttg	tta	ctg	act	tcc	att	cca	atc	tat	aat	atc	ttg	ttc	tg	ttt	aaa	432
Leu	Leu	Leu	Thr	Ser	Ile	Pro	Ile	Tyr	Asn	Ile	Leu	Phe	Trp	Phe	Lys	
	130					135					140					
aat	act	cag	ttt	gat	att	act	aaa	cac	aca	tta	ttc	aga	tac	gtc	tat	480
Asn	Thr	Gln	Phe	Asp	Ile	Thr	Lys	His	Thr	Leu	Phe	Arg	Tyr	Val	Tyr	
145					150					155					160	
aca	gat	aat	gcc	aaa	cac	ctg	gcg	ttg	gct	agg	tat	atg	cat	caa	aca	528
Thr	Asp	Asn	Ala	Lys	His	Leu	Ala	Leu	Ala	Arg	Tyr	Met	His	Gln	Thr	
				165					170					175		
gga	gac	tat	aag	cct	ttg	ttt	agt	cgt	ctc	aaa	gag	aat	tat	ata	ttt	576
Gly	Asp	Tyr	Lys	Pro	Leu	Phe	Ser	Arg	Leu	Lys	Glu	Asn	Tyr	Ile	Phe	
			180					185					190			
acc	ggt	ccc	gtt	cca	ata	ggt	atc	aaa	gat	ata	gat	cac	cct	aat	ctt	624
Thr	Gly	Pro	Val	Pro	Ile	Gly	Ile	Lys	Asp	Ile	Asp	His	Pro	Asn	Leu	
		195					200					205				
agt	aga	gca	aga	agt	cca	tcc	gat	tat	gag	aca	tta	gct	aat	att	agt	672
Ser	Arg	Ala	Arg	Ser	Pro	Ser	Asp	Tyr	Glu	Thr	Leu	Ala	Asn	Ile	Ser	
	210					215					220					
act	ata	ttg	tac	ttt	acc	aag	tat	gat	ccg	gta	tta	atg	ttt	tta	ttg	720
Thr	Ile	Leu	Tyr	Phe	Thr	Lys	Tyr	Asp	Pro	Val	Leu	Met	Phe	Leu	Leu	
225					230					235					240	
ttt	tac	gta	cct	ggg	tat	tca	att	act	aca	aaa	att	act	cca	gcc	gta	768
Phe	Tyr	Val	Pro	Gly	Tyr	Ser	Ile	Thr	Thr	Lys	Ile	Thr	Pro	Ala	Val	
				245					250					255		

<220>
 <221> CDS
 <222> (1)...(3018)

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<400> 147
atg gat gtt cgg tgc att aat tgg ttt gaa agt cac ggt gaa aac aga 48
Met Asp Val Arg Cys Ile Asn Trp Phe Glu Ser His Gly Glu Asn Arg
1 5 10 15

ttt tta tat ctg aaa tcc aga tgt cga aat ggt gag acc gta ttt ata 96
Phe Leu Tyr Leu Lys Ser Arg Cys Arg Asn Gly Glu Thr Val Phe Ile
20 25 30

cga ttt cct cat tac ttt tat tac gta gtt acg gac gaa ata tat cag 144
Arg Phe Pro His Tyr Phe Tyr Tyr Val Val Thr Asp Glu Ile Tyr Gln
35 40 45

tca ttg tct cct cct cca ttt aat gcg agg ccg ttg gga aag atg aga 192
Ser Leu Ser Pro Pro Pro Phe Asn Ala Arg Pro Leu Gly Lys Met Arg
50 55 60

act ata gac att gac gag aca ata agt tat aat cta gat att aaa gat 240
Thr Ile Asp Ile Asp Glu Thr Ile Ser Tyr Asn Leu Asp Ile Lys Asp
65 70 75 80

aga aaa tgc tcc gtc gca gat atg tgg ttg ata gaa gag cca aag aaa 288
Arg Lys Cys Ser Val Ala Asp Met Trp Leu Ile Glu Glu Pro Lys Lys
85 90 95

cgc agc ata caa aat gcc acc atg gat gaa ttt ctc aat att agt tgg 336
Arg Ser Ile Gln Asn Ala Thr Met Asp Glu Phe Leu Asn Ile Ser Trp
100 105 110

ttt tat att tct aac ggg ata tct cca gac gga tgt tac tcg ttg gac 384
Phe Tyr Ile Ser Asn Gly Ile Ser Pro Asp Gly Cys Tyr Ser Leu Asp
115 120 125

gag caa tat ttg aca aag att aac aat gga tgt tat cat tgt gac gat 432
Glu Gln Tyr Leu Thr Lys Ile Asn Asn Gly Cys Tyr His Cys Asp Asp
130 135 140

cca cgt aac tgt ttc gct aaa aaa ata cct aga ttc gat atc cca aga 480
Pro Arg Asn Cys Phe Ala Lys Lys Ile Pro Arg Phe Asp Ile Pro Arg
145 150 155 160

tcg tac tta ttt cta gat ata gag tgt cac ttc gat aag aag ttt cct 528
Ser Tyr Leu Phe Leu Asp Ile Glu Cys His Phe Asp Lys Lys Phe Pro
165 170 175

tct gta ttt att aac cca atc tcg cat aca agt tac tgt tat atc gat 576
Ser Val Phe Ile Asn Pro Ile Ser His Thr Ser Tyr Cys Tyr Ile Asp
180 185 190

tta agt ggt aaa cga tta ttg ttt acg ctc att aat gaa gag atg tta 624
Leu Ser Gly Lys Arg Leu Leu Phe Thr Leu Ile Asn Glu Glu Met Leu
195 200 205

acg gaa cag gaa ata caa gaa gcc gtc gat aga gga tgt ttg agg ata 672
Thr Glu Gln Glu Ile Gln Glu Ala Val Asp Arg Gly Cys Leu Arg Ile

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210	215	220	
cag tca cta atg gaa atg gat tac gaa cga gaa cta gtt cta tgt tct			720
Gln Ser Leu Met Glu Met Asp Tyr Glu Arg Glu Leu Val Leu Cys Ser			
225	230	235	240
gaa ata gtt ttg tta cga ata gct aaa caa ttg ttg gaa cta acg ttc			768
Glu Ile Val Leu Leu Arg Ile Ala Lys Gln Leu Leu Glu Leu Thr Phe			
	245	250	255
gac tac gtc gtt acc ttt aac gga cat aac ttt gat ctg aga tat att			816
Asp Tyr Val Val Thr Phe Asn Gly His Asn Phe Asp Leu Arg Tyr Ile			
	260	265	270
act aat cgt cta gag tta tta aca gga gag aag att atc ttt aga tct			864
Thr Asn Arg Leu Glu Leu Leu Thr Gly Glu Lys Ile Ile Phe Arg Ser			
	275	280	285
ccg gac aaa aag gaa gct gta cat ctc tgt att tat gag aga aat cag			912
Pro Asp Lys Lys Glu Ala Val His Leu Cys Ile Tyr Glu Arg Asn Gln			
	290	295	300
tct agt cat aag gga gta ggc ggc atg gcc aat act acg ttt cac gtt			960
Ser Ser His Lys Gly Val Gly Gly Met Ala Asn Thr Thr Phe His Val			
	305	310	320
aat aac aat aat gga act ata ttt ttc gat cta tat tca ttc att caa			1008
Asn Asn Asn Asn Gly Thr Ile Phe Phe Asp Leu Tyr Ser Phe Ile Gln			
	325	330	335
aaa tct gaa aaa ttg gat tcg tac aaa ttg gat tct ata tcc aag aac			1056
Lys Ser Glu Lys Leu Asp Ser Tyr Lys Leu Asp Ser Ile Ser Lys Asn			
	340	345	350
gcg ttc agt tgc atg ggt aaa gta tta aat aga gga gtt aga gaa atg			1104
Ala Phe Ser Cys Met Gly Lys Val Leu Asn Arg Gly Val Arg Glu Met			
	355	360	365
acg ttc atc ggt gac gat act aca gac gcg aaa ggc aaa gcc gct gca			1152
Thr Phe Ile Gly Asp Asp Thr Thr Asp Ala Lys Gly Lys Ala Ala Ala			
	370	375	380
ttt gca aag gtt tta acc aca ggt aat tat gtg act gtt gat gag gat			1200
Phe Ala Lys Val Leu Thr Thr Gly Asn Tyr Val Thr Val Asp Glu Asp			
	385	390	400
att ata tgt aaa gta att cgt aaa gat att tgg gaa aat gga ttt aaa			1248
Ile Ile Cys Lys Val Ile Arg Lys Asp Ile Trp Glu Asn Gly Phe Lys			
	405	410	415
gtc gta cta tta tgt cct act tta cct aat gat aca tat aaa tta tct			1296
Val Val Leu Leu Cys Pro Thr Leu Pro Asn Asp Thr Tyr Lys Leu Ser			
	420	425	430
ttc gga aag gat gac gtt gat tta gct cag atg tat aag gat tat aat			1344
Phe Gly Lys Asp Asp Val Asp Leu Ala Gln Met Tyr Lys Asp Tyr Asn			
	435	440	445
cta aac ata gct tta gat atg gct aga tac tgt att cat gat gct tgt			1392

Leu	Asn	Ile	Ala	Leu	Asp	Met	Ala	Arg	Tyr	Cys	Ile	His	Asp	Ala	Cys		
450						455					460						
ttg	tgt	cag	tat	ttg	tgg	gag	tat	tat	gga	gta	gaa	aca	aaa	aca	gac	1440	
Leu	Cys	Gln	Tyr	Leu	Trp	Glu	Tyr	Tyr	Gly	Val	Glu	Thr	Lys	Thr	Asp		
465					470				475						480		
gcg	ggt	gcg	tca	aca	tat	gtg	ctt	cct	caa	tcc	atg	gta	ttc	gaa	tat	1488	
Ala	Gly	Ala	Ser	Thr	Tyr	Val	Leu	Pro	Gln	Ser	Met	Val	Phe	Glu	Tyr		
				485					490					495			
aga	gcg	agt	aca	gtc	atc	aag	ggt	cca	ctg	tta	aag	cta	ttg	ttg	gaa	1536	
Arg	Ala	Ser	Thr	Val	Ile	Lys	Gly	Pro	Leu	Leu	Lys	Leu	Leu	Leu	Glu		
			500					505					510				
act	aaa	act	atc	tta	gtt	aga	tca	gaa	aca	aaa	caa	aag	ttt	cct	tat	1584	
Thr	Lys	Thr	Ile	Leu	Val	Arg	Ser	Glu	Thr	Lys	Gln	Lys	Phe	Pro	Tyr		
			515				520					525					
gaa	ggc	ggt	aag	gta	ttt	gct	cca	aaa	caa	aaa	atg	ttt	agt	aat	aat	1632	
Glu	Gly	Gly	Lys	Val	Phe	Ala	Pro	Lys	Gln	Lys	Met	Phe	Ser	Asn	Asn		
	530					535					540						
gta	tta	atc	ttt	gat	tat	aac	agt	ctg	tat	cct	aat	gtg	tgt	atc	ttt	1680	
Val	Leu	Ile	Phe	Asp	Tyr	Asn	Ser	Leu	Tyr	Pro	Asn	Val	Cys	Ile	Phe		
545				550					555						560		
gga	aat	cta	tct	ccg	gaa	aca	tta	gtc	ggt	gtc	gtt	gtt	agt	acc	aat	1728	
Gly	Asn	Leu	Ser	Pro	Glu	Thr	Leu	Val	Gly	Val	Val	Val	Ser	Thr	Asn		
				565				570						575			
aga	ttg	gaa	gaa	gaa	ata	aat	aat	cag	cta	ttg	ctt	cag	aaa	tat	cca	1776	
Arg	Leu	Glu	Glu	Glu	Ile	Asn	Asn	Gln	Leu	Leu	Leu	Gln	Lys	Tyr	Pro		
			580					585					590				
cct	cct	aga	tat	att	acg	gtt	cat	tgt	gaa	cct	aga	cta	ccg	aac	ctc	1824	
Pro	Pro	Arg	Tyr	Ile	Thr	Val	His	Cys	Glu	Pro	Arg	Leu	Pro	Asn	Leu		
		595					600					605					
atc	tct	gaa	ata	gca	att	ttc	gat	aga	tcg	ata	gaa	gga	acc	att	cct	1872	
Ile	Ser	Glu	Ile	Ala	Ile	Phe	Asp	Arg	Ser	Ile	Glu	Gly	Thr	Ile	Pro		
	610					615					620						
aga	cta	tta	aga	aca	ttt	ttg	gca	gag	aga	gcc	aga	tat	aaa	aag	atg	1920	
Arg	Leu	Leu	Arg	Thr	Phe	Leu	Ala	Glu	Arg	Ala	Arg	Tyr	Lys	Lys	Met		
625					630					635					640		
tta	aaa	cag	gct	acc	agt	tca	act	gaa	aag	gcc	atc	tat	gat	tcc	atg	1968	
Leu	Lys	Gln	Ala	Thr	Ser	Ser	Thr	Glu	Lys	Ala	Ile	Tyr	Asp	Ser	Met		
				645					650					655			
caa	tat	acg	tac	aag	ata	gta	gcc	aac	tca	gta	tat	ggt	ctg	atg	gga	2016	
Gln	Tyr	Thr	Tyr	Lys	Ile	Val	Ala	Asn	Ser	Val	Tyr	Gly	Leu	Met	Gly		
			660					665					670				
ttt	aga	aat	agt	gct	cta	tac	tca	tac	gct	tcg	gct	aag	agt	tgc	aca	2064	
Phe	Arg	Asn	Ser	Ala	Leu	Tyr	Ser	Tyr	Ala	Ser	Ala	Lys	Ser	Cys	Thr		
		675					680					685					

tcc ata gga cgt aga atg atc ttg tat cta gaa tcg gta cta aat gga	2112
Ser Ile Gly Arg Arg Met Ile Leu Tyr Leu Glu Ser Val Leu Asn Gly	
690 695 700	
gca gag tta tct aac ggt atg tta cgg ttt gcc aat cca tta agt aat	2160
Ala Glu Leu Ser Asn Gly Met Leu Arg Phe Ala Asn Pro Leu Ser Asn	
705 710 715 720	
cca ttt tat atg gac gat aga gat att aat ccg att gtg aaa aca tcg	2208
Pro Phe Tyr Met Asp Asp Arg Asp Ile Asn Pro Ile Val Lys Thr Ser	
725 730 735	
ttg cct ata gat tac aga ttt cgt ttt cgt agc gtg tat gga gat acc	2256
Leu Pro Ile Asp Tyr Arg Phe Arg Phe Arg Ser Val Tyr Gly Asp Thr	
740 745 750	
gac tcc gtg ttt aca gag ata gac agt caa gat gtc gat aag tct ata	2304
Asp Ser Val Phe Thr Glu Ile Asp Ser Gln Asp Val Asp Lys Ser Ile	
755 760 765	
gaa ata gcg aaa gag tta gaa cga ctg att aat aat aga gta ttg ttt	2352
Glu Ile Ala Lys Glu Leu Glu Arg Leu Ile Asn Asn Arg Val Leu Phe	
770 775 780	
aat aat ttt aaa ata gag ttt gag gcg gta tat aag aat ctg att atg	2400
Asn Asn Phe Lys Ile Glu Phe Glu Ala Val Tyr Lys Asn Leu Ile Met	
785 790 795 800	
caa tcg aag aag aaa tat aca acg atg aaa tac tca gca tcg tcg aat	2448
Gln Ser Lys Lys Lys Tyr Thr Thr Met Lys Tyr Ser Ala Ser Ser Asn	
805 810 815	
tca aaa tct gta cct gag aga att aat aaa ggt act agt gaa act aga	2496
Ser Lys Ser Val Pro Glu Arg Ile Asn Lys Gly Thr Ser Glu Thr Arg	
820 825 830	
aga gat gtt tcc aag ttt cat aag aat atg att aag atg tac aaa acc	2544
Arg Asp Val Ser Lys Phe His Lys Asn Met Ile Lys Met Tyr Lys Thr	
835 840 845	
aga ctg tct gag atg ttg tct gaa gga cgg atg aat tct aat cag gta	2592
Arg Leu Ser Glu Met Leu Glu Gly Arg Met Asn Ser Asn Gln Val	
850 855 860	
tgt ata gat att ctc cgt tct tta gaa aca gat tta cga tcc gaa ttt	2640
Cys Ile Asp Ile Leu Arg Ser Leu Glu Thr Asp Leu Arg Ser Glu Phe	
865 870 875 880	
gat agt aga tcg tct cct cta gaa tta ttt atg ttg agt cga atg cat	2688
Asp Ser Arg Ser Ser Pro Leu Glu Leu Phe Met Leu Ser Arg Met His	
885 890 895	
cac tca aat tat aaa tcc gca gat aac cct aat atg tat ttg gtt act	2736
His Ser Asn Tyr Lys Ser Ala Asp Asn Pro Asn Met Tyr Leu Val Thr	
900 905 910	
gaa tat aat aaa aat aat cca gag act ata gaa ctt gga gaa cga tat	2784
Glu Tyr Asn Lys Asn Asn Pro Glu Thr Ile Glu Leu Gly Glu Arg Tyr	
915 920 925	

tat ttt gca tat att tgt cct aat gga cca tgg acc aaa aaa ctt gta	2832
Tyr Phe Ala Tyr Ile Cys Pro Asn Gly Pro Trp Thr Lys Lys Leu Val	
930 935 940	
aat att aaa aca tat gaa aca att atc gat aga agt ttt aaa ctc ggc	2880
Asn Ile Lys Thr Tyr Glu Thr Ile Ile Asp Arg Ser Phe Lys Leu Gly	
945 950 955 960	
agt gat caa aga ata ttt tac gaa gtt tac ttt aaa cga ttg acg tcc	2928
Ser Asp Gln Arg Ile Phe Tyr Glu Val Tyr Phe Lys Arg Leu Thr Ser	
965 970 975	
gaa ata gtc aat cta ttg gat aat aaa gtt tta tgc atc tca ttc ttt	2976
Glu Ile Val Asn Leu Leu Asp Asn Lys Val Leu Cys Ile Ser Phe Phe	
980 985 990	
gaa aga atg ttt ggt tca aaa cct aca ttt tac gaa gca taa	3018
Glu Arg Met Phe Gly Ser Lys Pro Thr Phe Tyr Glu Ala *	
995 1000 1005	

<210> 148
 <211> 1005
 <212> PRT
 <213> vaccinia virus

<400> 148
Met Asp Val Arg Cys Ile Asn Trp Phe Glu Ser His Gly Glu Asn Arg
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Phe Leu Tyr Leu Lys Ser Arg Cys Arg Asn Gly Glu Thr Val Phe Ile
20 25 30
Arg Phe Pro His Tyr Phe Tyr Tyr Val Val Thr Asp Glu Ile Tyr Gln
35 40 45
Ser Leu Ser Pro Pro Pro Phe Asn Ala Arg Pro Leu Gly Lys Met Arg
50 55 60
Thr Ile Asp Ile Asp Glu Thr Ile Ser Tyr Asn Leu Asp Ile Lys Asp
65 70 75 80
Arg Lys Cys Ser Val Ala Asp Met Trp Leu Ile Glu Glu Pro Lys Lys
85 90 95
Arg Ser Ile Gln Asn Ala Thr Met Asp Glu Phe Leu Asn Ile Ser Trp
100 105 110
Phe Tyr Ile Ser Asn Gly Ile Ser Pro Asp Gly Cys Tyr Ser Leu Asp
115 120 125
Glu Gln Tyr Leu Thr Lys Ile Asn Asn Gly Cys Tyr His Cys Asp Asp
130 135 140
Pro Arg Asn Cys Phe Ala Lys Lys Ile Pro Arg Phe Asp Ile Pro Arg
145 150 155 160
Ser Tyr Leu Phe Leu Asp Ile Glu Cys His Phe Asp Lys Lys Phe Pro
165 170 175
Ser Val Phe Ile Asn Pro Ile Ser His Thr Ser Tyr Cys Tyr Ile Asp
180 185 190
Leu Ser Gly Lys Arg Leu Leu Phe Thr Leu Ile Asn Glu Glu Met Leu
195 200 205
Thr Glu Gln Glu Ile Gln Glu Ala Val Asp Arg Gly Cys Leu Arg Ile
210 215 220
Gln Ser Leu Met Glu Met Asp Tyr Glu Arg Glu Leu Val Leu Cys Ser
225 230 235 240

Glu	Ile	Val	Leu	Leu	Arg	Ile	Ala	Lys	Gln	Leu	Leu	Glu	Leu	Thr	Phe	
			245						250					255		
Asp	Tyr	Val	Val	Thr	Phe	Asn	Gly	His	Asn	Phe	Asp	Leu	Arg	Tyr	Ile	
		260					265						270			
Thr	Asn	Arg	Leu	Glu	Leu	Leu	Thr	Gly	Glu	Lys	Ile	Ile	Phe	Arg	Ser	
	275					280						285				
Pro	Asp	Lys	Lys	Glu	Ala	Val	Gly	Gly	Met	Ala	Asn	Thr	Thr	Phe	His	Val
290						295						300				
Ser	Ser	His	Lys	Gly	Val	Gly	Gly	Met	Ala	Asn	Thr	Thr	Phe	His	Val	
305					310					315					320	
Asn	Asn	Asn	Asn	Gly	Thr	Ile	Phe	Phe	Asp	Leu	Tyr	Ser	Phe	Ile	Gln	
				325					330					335		
Lys	Ser	Glu	Lys	Leu	Asp	Ser	Tyr	Lys	Leu	Asp	Ser	Ile	Ser	Lys	Asn	
		340						345					350			
Ala	Phe	Ser	Cys	Met	Gly	Lys	Val	Leu	Asn	Arg	Gly	Val	Arg	Glu	Met	
		355					360					365				
Thr	Phe	Ile	Gly	Asp	Asp	Thr	Thr	Asp	Ala	Lys	Gly	Lys	Ala	Ala	Ala	
	370					375					380					
Phe	Ala	Lys	Val	Leu	Thr	Thr	Gly	Asn	Tyr	Val	Thr	Val	Asp	Glu	Asp	
385					390					395					400	
Ile	Ile	Cys	Lys	Val	Ile	Arg	Lys	Asp	Ile	Trp	Glu	Asn	Gly	Phe	Lys	
			405					410						415		
Val	Val	Leu	Leu	Cys	Pro	Thr	Leu	Pro	Asn	Asp	Thr	Tyr	Lys	Leu	Ser	
		420						425					430			
Phe	Gly	Lys	Asp	Asp	Val	Asp	Leu	Ala	Gln	Met	Tyr	Lys	Asp	Tyr	Asn	
		435					440					445				
Leu	Asn	Ile	Ala	Leu	Asp	Met	Ala	Arg	Tyr	Cys	Ile	His	Asp	Ala	Cys	
	450					455					460					
Leu	Cys	Gln	Tyr	Leu	Trp	Glu	Tyr	Tyr	Gly	Val	Glu	Thr	Lys	Thr	Asp	
465					470					475					480	
Ala	Gly	Ala	Ser	Thr	Tyr	Val	Leu	Pro	Gln	Ser	Met	Val	Phe	Glu	Tyr	
			485						490					495		
Arg	Ala	Ser	Thr	Val	Ile	Lys	Gly	Pro	Leu	Leu	Lys	Leu	Leu	Leu	Glu	
		500						505					510			
Thr	Lys	Thr	Ile	Leu	Val	Arg	Ser	Glu	Thr	Lys	Gln	Lys	Phe	Pro	Tyr	
		515					520					525				
Glu	Gly	Gly	Lys	Val	Phe	Ala	Pro	Lys	Gln	Lys	Met	Phe	Ser	Asn	Asn	
	530					535					540					
Val	Leu	Ile	Phe	Asp	Tyr	Asn	Ser	Leu	Tyr	Pro	Asn	Val	Cys	Ile	Phe	
545					550					555					560	
Gly	Asn	Leu	Ser	Pro	Glu	Thr	Leu	Val	Gly	Val	Val	Val	Ser	Thr	Asn	
			565						570					575		
Arg	Leu	Glu	Glu	Glu	Ile	Asn	Asn	Gln	Leu	Leu	Leu	Gln	Lys	Tyr	Pro	
		580						585					590			
Pro	Pro	Arg	Tyr	Ile	Thr	Val	His	Cys	Glu	Pro	Arg	Leu	Pro	Asn	Leu	
		595					600					605				
Ile	Ser	Glu	Ile	Ala	Ile	Phe	Asp	Arg	Ser	Ile	Glu	Gly	Thr	Ile	Pro	
	610					615					620					
Arg	Leu	Leu	Arg	Thr	Phe	Leu	Ala	Glu	Arg	Ala	Arg	Tyr	Lys	Lys	Met	
625					630					635					640	
Leu	Lys	Gln	Ala	Thr	Ser	Ser	Thr	Glu	Lys	Ala	Ile	Tyr	Asp	Ser	Met	
			645						650					655		
Gln	Tyr	Thr	Tyr	Lys	Ile	Val	Ala	Asn	Ser	Val	Tyr	Gly	Leu	Met	Gly	
		660						665					670			
Phe	Arg	Asn	Ser	Ala	Leu	Tyr	Ser	Tyr	Ala	Ser	Ala	Lys	Ser	Cys	Thr	
		675					680					685				
Ser	Ile	Gly	Arg	Arg	Met	Ile	Leu	Tyr	Leu	Glu	Ser	Val	Leu	Asn	Gly	
	690					695					700					
Ala	Glu	Leu	Ser	Asn	Gly	Met	Leu	Arg	Phe	Ala	Asn	Pro	Leu	Ser	Asn	

705	Pro	Phe	Tyr	Met	Asp	Asp	Arg	Asp	Ile	Asn	Pro	Ile	Val	Lys	Thr	Ser	720
					725					730							735
Leu	Pro	Ile	Asp	Tyr	Arg	Phe	Arg	Phe	Arg	Ser	Val	Tyr	Gly	Asp	Thr		
			740					745					750				
Asp	Ser	Val	Phe	Thr	Glu	Ile	Asp	Ser	Gln	Asp	Val	Asp	Lys	Ser	Ile		
		755					760					765					
Glu	Ile	Ala	Lys	Glu	Leu	Glu	Arg	Leu	Ile	Asn	Asn	Arg	Val	Leu	Phe		
		770				775					780						
Asn	Asn	Phe	Lys	Ile	Glu	Phe	Glu	Ala	Val	Tyr	Lys	Asn	Leu	Ile	Met		
785					790					795					800		
Gln	Ser	Lys	Lys	Lys	Tyr	Thr	Thr	Met	Lys	Tyr	Ser	Ala	Ser	Ser	Asn		
			805						810						815		
Ser	Lys	Ser	Val	Pro	Glu	Arg	Ile	Asn	Lys	Gly	Thr	Ser	Glu	Thr	Arg		
			820					825					830				
Arg	Asp	Val	Ser	Lys	Phe	His	Lys	Asn	Met	Ile	Lys	Met	Tyr	Lys	Thr		
		835					840					845					
Arg	Leu	Ser	Glu	Met	Leu	Ser	Glu	Gly	Arg	Met	Asn	Ser	Asn	Gln	Val		
		850			855						860						
Cys	Ile	Asp	Ile	Leu	Arg	Ser	Leu	Glu	Thr	Asp	Leu	Arg	Ser	Glu	Phe		
865					870					875					880		
Asp	Ser	Arg	Ser	Ser	Pro	Leu	Glu	Leu	Phe	Met	Leu	Ser	Arg	Met	His		
			885						890					895			
His	Ser	Asn	Tyr	Lys	Ser	Ala	Asp	Asn	Pro	Asn	Met	Tyr	Leu	Val	Thr		
		900						905					910				
Glu	Tyr	Asn	Lys	Asn	Asn	Pro	Glu	Thr	Ile	Glu	Leu	Gly	Glu	Arg	Tyr		
		915					920					925					
Tyr	Phe	Ala	Tyr	Ile	Cys	Pro	Asn	Gly	Pro	Trp	Thr	Lys	Lys	Leu	Val		
		930				935					940						
Asn	Ile	Lys	Thr	Tyr	Glu	Thr	Ile	Ile	Asp	Arg	Ser	Phe	Lys	Leu	Gly		
945					950				955						960		
Ser	Asp	Gln	Arg	Ile	Phe	Tyr	Glu	Val	Tyr	Phe	Lys	Arg	Leu	Thr	Ser		
			965						970					975			
Glu	Ile	Val	Asn	Leu	Leu	Asp	Asn	Lys	Val	Leu	Cys	Ile	Ser	Phe	Phe		
		980					985					990					
Glu	Arg	Met	Phe	Gly	Ser	Lys	Pro	Thr	Phe	Tyr	Glu	Ala					
		995					1000					1005					

<210> 149

<211> 288

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(288)

<400> 149

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1				5					10					15		

gta	ctt	tcg	caa	gcg	ggt	tta	gac	ggc	aac	ata	gaa	gcg	tgt	aaa	cga	96
Val	Leu	Ser	Gln	Ala	Gly	Leu	Asp	Gly	Asn	Ile	Glu	Ala	Cys	Lys	Arg	
			20					25					30			

aaa	cta	tat	act	ata	gtc	agc	act	ctt	cca	tgt	cct	gca	tgt	aga	cgg	144
Lys	Leu	Tyr	Thr	Ile	Val	Ser	Thr	Leu	Pro	Cys	Pro	Ala	Cys	Arg	Arg	

35										40										45										
cac	gcg	act	atc	gct	ata	gag	gac	aat	aat	gtc	atg	tct	agc	gat	gat	192														
His	Ala	Thr	Ile	Ala	Ile	Glu	Asp	Asn	Asn	Val	Met	Ser	Ser	Asp	Asp															
50					55					60																				
ctg	aat	tat	att	tat	tat	ttt	ttc	atc	aga	tta	ttt	aac	aat	ttg	gca	240														
Leu	Asn	Tyr	Ile	Tyr	Tyr	Phe	Phe	Ile	Arg	Leu	Phe	Asn	Asn	Leu	Ala															
65			70				75				80																			
tct	gat	ccc	aaa	tac	gca	atc	aat	gtg	tca	aag	gtt	aac	cct	tta	taa	288														
Ser	Asp	Pro	Lys	Tyr	Ala	Ile	Asn	Val	Ser	Lys	Val	Asn	Pro	Leu	*															
85				90				95																						

<210> 150
 <211> 95
 <212> PRT
 <213> vaccinia virus

<400> 150															
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1				5					10					15	
Val	Leu	Ser	Gln	Ala	Gly	Leu	Asp	Gly	Asn	Ile	Glu	Ala	Cys	Lys	Arg
			20					25					30		
Lys	Leu	Tyr	Thr	Ile	Val	Ser	Thr	Leu	Pro	Cys	Pro	Ala	Cys	Arg	Arg
		35					40					45			
His	Ala	Thr	Ile	Ala	Ile	Glu	Asp	Asn	Asn	Val	Met	Ser	Ser	Asp	Asp
	50					55				60					
Leu	Asn	Tyr	Ile	Tyr	Tyr	Phe	Phe	Ile	Arg	Leu	Phe	Asn	Asn	Leu	Ala
65				70					75					80	
Ser	Asp	Pro	Lys	Tyr	Ala	Ile	Asn	Val	Ser	Lys	Val	Asn	Pro	Leu	
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 <211> 387
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
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Met	Glu	Leu	Val	Asn	Ile	Phe	Leu	Glu	Thr	Asp	Ala	Gly	Arg	Val	Lys	
1				5					10					15		
ttt	gcc	ata	aaa	aat	acc	gac	gat	gta	tgt	gcc	tcg	gag	tta	ata	aat	96
Phe	Ala	Ile	Lys	Asn	Thr	Asp	Asp	Val	Cys	Ala	Ser	Glu	Leu	Ile	Asn	
			20					25					30			
aaa	ttt	gtg	gaa	ctg	tta	agt	gaa	tac	att	cac	att	gac	caa	tca	gaa	144
Lys	Phe	Val	Glu	Leu	Leu	Ser	Glu	Tyr	Ile	His	Ile	Asp	Gln	Ser	Glu	
		35					40					45				
ttt	tat	ttg	gtg	gta	aag	gat	aag	gat	att	ttt	tat	ttt	aag	tgt	gat	192

Phe	Tyr	Leu	Val	Val	Lys	Asp	Lys	Asp	Ile	Phe	Tyr	Phe	Lys	Cys	Asp	
50						55					60					
agg	ggg	tct	att	tcg	att	gta	aac	aat	gag	ttt	tat	gtc	ttt	gac	gaa	240
Arg	Gly	Ser	Ile	Ser	Ile	Val	Asn	Asn	Glu	Phe	Tyr	Val	Phe	Asp	Glu	
65					70				75					80		
ccc	ttg	ctg	ttt	gtt	aaa	gat	ttc	act	aat	gta	acg	ggg	gtt	gaa	ttc	288
Pro	Leu	Leu	Phe	Val	Lys	Asp	Phe	Thr	Asn	Val	Thr	Gly	Val	Glu	Phe	
				85				90						95		
ata	gtc	aca	gaa	acc	atg	ccg	tgt	aga	att	ata	cca	aaa	aat	aat	cac	336
Ile	Val	Thr	Glu	Thr	Met	Pro	Cys	Arg	Ile	Ile	Pro	Lys	Asn	Asn	His	
			100					105					110			
gcg	gtt	att	tca	gtt	gtg	act	aat	cat	aag	ttt	tat	aat	ggg	tta	agt	384
Ala	Val	Ile	Ser	Val	Val	Thr	Asn	His	Lys	Phe	Tyr	Asn	Gly	Leu	Ser	
		115					120					125				
tta																387
Leu																

<210> 152
 <211> 129
 <212> PRT
 <213> vaccinia virus

Met	Glu	Leu	Val	Asn	Ile	Phe	Leu	Glu	Thr	Asp	Ala	Gly	Arg	Val	Lys	
1				5					10					15		
Phe	Ala	Ile	Lys	Asn	Thr	Asp	Asp	Val	Cys	Ala	Ser	Glu	Leu	Ile	Asn	
			20					25					30			
Lys	Phe	Val	Glu	Leu	Leu	Ser	Glu	Tyr	Ile	His	Ile	Asp	Gln	Ser	Glu	
		35					40					45				
Phe	Tyr	Leu	Val	Val	Lys	Asp	Lys	Asp	Ile	Phe	Tyr	Phe	Lys	Cys	Asp	
	50				55					60						
Arg	Gly	Ser	Ile	Ser	Ile	Val	Asn	Asn	Glu	Phe	Tyr	Val	Phe	Asp	Glu	
65				70					75					80		
Pro	Leu	Leu	Phe	Val	Lys	Asp	Phe	Thr	Asn	Val	Thr	Gly	Val	Glu	Phe	
			85					90					95			
Ile	Val	Thr	Glu	Thr	Met	Pro	Cys	Arg	Ile	Ile	Pro	Lys	Asn	Asn	His	
			100					105					110			
Ala	Val	Ile	Ser	Val	Val	Thr	Asn	His	Lys	Phe	Tyr	Asn	Gly	Leu	Ser	
		115					120					125				
Leu																

<210> 153
 <211> 2001
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(2001)

<400> 153

atg ttc atg tat ccg gaa ttt gcg agg aag gct tta tca aag ctt att	48
Met Phe Met Tyr Pro Glu Phe Ala Arg Lys Ala Leu Ser Lys Leu Ile	
1 5 10 15	
tca aaa aaa tta aac att gaa aag gtg tct agc aag cac cag ctc gtg	96
Ser Lys Lys Leu Asn Ile Glu Lys Val Ser Ser Lys His Gln Leu Val	
20 25 30	
tta ctg gat tat gga tta cac gga cta ttg cca aaa tca ctg tat ctg	144
Leu Leu Asp Tyr Gly Leu His Gly Leu Leu Pro Lys Ser Leu Tyr Leu	
35 40 45	
gaa gct att aat tcc gat att ctc aat gtt aga ttc ttt cct cct gaa	192
Glu Ala Ile Asn Ser Asp Ile Leu Asn Val Arg Phe Phe Pro Pro Glu	
50 55 60	
ata ata aac gtc act gat atc gtt aag gct ctc caa aat tct tgt aga	240
Ile Ile Asn Val Thr Asp Ile Val Lys Ala Leu Gln Asn Ser Cys Arg	
65 70 75 80	
gta gat gag tac cta aaa gct gtt tcc tta tat cat aag aat tct tta	288
Val Asp Glu Tyr Leu Lys Ala Val Ser Leu Tyr His Lys Asn Ser Leu	
85 90 95	
atg gta ttg gga cca aat gta gtc aag ctt atg ata gaa tat aat ctt	336
Met Val Leu Gly Pro Asn Val Val Lys Leu Met Ile Glu Tyr Asn Leu	
100 105 110	
ctt aca cac agt gac ttg gaa tgg tta att aat gaa aat gta gtc aag	384
Leu Thr His Ser Asp Leu Glu Trp Leu Ile Asn Glu Asn Val Val Lys	
115 120 125	
gct aca tac ctt tta aaa atc aat gcc tat atg att aac ttt aaa ata	432
Ala Thr Tyr Leu Leu Lys Ile Asn Ala Tyr Met Ile Asn Phe Lys Ile	
130 135 140	
gat cta acg gtt gat gaa atc att gac tta gtt aaa gat att cct gta	480
Asp Leu Thr Val Asp Glu Ile Ile Asp Leu Val Lys Asp Ile Pro Val	
145 150 155 160	
gga gct acg cta cat cta tat aat ata tta aac aat ata gat ttg gac	528
Gly Ala Thr Leu His Leu Tyr Asn Ile Leu Asn Asn Ile Asp Leu Asp	
165 170 175	
att gtt ctt cgt ata tct gat gaa tat aat ata cca cct gtt cac gat	576
Ile Val Leu Arg Ile Ser Asp Glu Tyr Asn Ile Pro Pro Val His Asp	
180 185 190	
att ctg tct aaa ctt acc gat gaa gag atg tgt ata aaa cta gtt aca	624
Ile Leu Ser Lys Leu Thr Asp Glu Glu Met Cys Ile Lys Leu Val Thr	
195 200 205	
aag tat cct atg gac aat gtt ata aat ttt att aat caa gat gtt aga	672
Lys Tyr Pro Met Asp Asn Val Ile Asn Phe Ile Asn Gln Asp Val Arg	
210 215 220	
tat agt ccc acc ttc atc aag aca att aaa gat ttt gtc aac aag cat	720
Tyr Ser Pro Thr Phe Ile Lys Thr Ile Lys Asp Phe Val Asn Lys His	

225	230	235	240	
ctt cca acc atg tac gat gga tta aat gat tat cta cat tct gtt att				768
Leu Pro Thr Met Tyr Asp Gly Leu Asn Asp Tyr Leu His Ser Val Ile	245	250	255	
atc gac gag gac tta ata gag gaa tat aaa att aaa tcc gtt gcc atg				816
Ile Asp Glu Asp Leu Ile Glu Glu Tyr Lys Ile Lys Ser Val Ala Met	260	265	270	
ttt aat ttg gaa tac aaa act gat gta gat act cta aca ttg gac gaa				864
Phe Asn Leu Glu Tyr Lys Thr Asp Val Asp Thr Leu Thr Leu Asp Glu	275	280	285	
cag ata ttt gta gag gta aac atc tca tat tat gat ttt aga tat aga				912
Gln Ile Phe Val Glu Val Asn Ile Ser Tyr Tyr Asp Phe Arg Tyr Arg	290	295	300	
caa ttt gcc gat gaa ttt aga gat tac att atg ata aaa gaa aga aga				960
Gln Phe Ala Asp Glu Phe Arg Asp Tyr Ile Met Ile Lys Glu Arg Arg	305	310	315	320
caa atc acc atg caa tct ggt gat aga ata aga agg ttt aga cgt ccc				1008
Gln Ile Thr Met Gln Ser Gly Asp Arg Ile Arg Arg Phe Arg Arg Pro	325	330	335	
atg tca ttg aga tcc act atc atc aaa aag gat act gat tct cta gag				1056
Met Ser Leu Arg Ser Thr Ile Ile Lys Lys Asp Thr Asp Ser Leu Glu	340	345	350	
gat att ctc gca cat ata gat aat gcc aga aaa aat agc aag gta tcc				1104
Asp Ile Leu Ala His Ile Asp Asn Ala Arg Lys Asn Ser Lys Val Ser	355	360	365	
att gaa gat gtt gag aga atc att tca tct ttc cgt ctt aat ccc tgt				1152
Ile Glu Asp Val Glu Arg Ile Ile Ser Ser Phe Arg Leu Asn Pro Cys	370	375	380	
gtt gtc aga cgc acc atg ctg tct gat ata gat atc aaa aca aag ata				1200
Val Val Arg Arg Thr Met Leu Ser Asp Ile Asp Ile Lys Thr Lys Ile	385	390	395	400
atg gtg cta aaa att gtc aaa gat tgg aaa tct tgt gct ctg aca cta				1248
Met Val Leu Lys Ile Val Lys Asp Trp Lys Ser Cys Ala Leu Thr Leu	405	410	415	
tca gcc atc aaa gga att atg gta aca gat acc atc aat acc gtg tta				1296
Ser Ala Ile Lys Gly Ile Met Val Thr Asp Thr Ile Asn Thr Val Leu	420	425	430	
tcc aaa att ctg cat cat cat agg aat gtc ttc aag tat ctt aca tct				1344
Ser Lys Ile Leu His His His Arg Asn Val Phe Lys Tyr Leu Thr Ser	435	440	445	
gta gag aat aaa gaa att gct gtc tgt aat tgc tcc aga tgt ctg tcg				1392
Val Glu Asn Lys Glu Ile Ala Val Cys Asn Cys Ser Arg Cys Leu Ser	450	455	460	
ctc ttc tat aga gaa tta aaa agt gta cga tgt gat cta cgc aca gat				1440

Leu Phe Tyr Arg Glu	Leu Lys Ser Val Arg Cys Asp Leu Arg Thr Asp	
465	470 475	480
gat gga tta ttg gat agg cta tac gat ctg act aga tac gcc tta cac		1488
Asp Gly Leu Leu Asp Arg Leu Tyr Asp Leu Thr Arg Tyr Ala Leu His	485 490 495	
gga aaa atc aat caa aac tta atc ggt caa cga tgt tgg ggt ccg ttg		1536
Gly Lys Ile Asn Gln Asn Leu Ile Gly Gln Arg Cys Trp Gly Pro Leu	500 505 510	
aca gaa atg ctg ttt aac gaa aat aaa aag aaa aaa cta aat aat tta		1584
Thr Glu Met Leu Phe Asn Glu Asn Lys Lys Lys Lys Leu Asn Asn Leu	515 520 525	
atg gaa tac atc aaa ata tca gac atg ttg gta tac gga cac tct atc		1632
Met Glu Tyr Ile Lys Ile Ser Asp Met Leu Val Tyr Gly His Ser Ile	530 535 540	
gag aag acg ctt att cca att act gat tct ctt tca ttc aag cta tct		1680
Glu Lys Thr Leu Ile Pro Ile Thr Asp Ser Leu Ser Phe Lys Leu Ser	545 550 555 560	
gtt gat acc atg tct gtg tta aat gat caa tat gcc aag gtt gtc atc		1728
Val Asp Thr Met Ser Val Leu Asn Asp Gln Tyr Ala Lys Val Val Ile	565 570 575	
ttc ttc aat acc atc ata gaa tat att ata gct act atc tat tat aga		1776
Phe Phe Asn Thr Ile Ile Glu Tyr Ile Ile Ala Thr Ile Tyr Tyr Arg	580 585 590	
ttg aca gtc ttg gac aat tat act aat gtc aaa cat ttt gta tcc aaa		1824
Leu Thr Val Leu Asp Asn Tyr Thr Asn Val Lys His Phe Val Ser Lys	595 600 605	
gtg tta cac act gtc atg gaa gca tgt ggc gta ctg ttt tca tac att		1872
Val Leu His Thr Val Met Glu Ala Cys Gly Val Leu Phe Ser Tyr Ile	610 615 620	
aaa gtt aat gac aaa ata gag cat gaa ttg gag gag atg gtg gac aaa		1920
Lys Val Asn Asp Lys Ile Glu His Glu Leu Glu Glu Met Val Asp Lys	625 630 635 640	
ggt acc gta cct tct tat ttg tat cat ctg tcc atc aac gtc att tca		1968
Gly Thr Val Pro Ser Tyr Leu Tyr His Leu Ser Ile Asn Val Ile Ser	645 650 655	
ata ata ttg gat gat ata aat gga act cgt taa		2001
Ile Ile Leu Asp Asp Ile Asn Gly Thr Arg *	660 665	

<210> 154
 <211> 666
 <212> PRT
 <213> vaccinia virus

<400> 154
 Met Phe Met Tyr Pro Glu Phe Ala Arg Lys Ala Leu Ser Lys Leu Ile

1				5					10					15			
Ser	Lys	Lys	Leu	Asn	Ile	Glu	Lys	Val	Ser	Ser	Lys	His	Gln	Leu	Val		
			20					25					30				
Leu	Leu	Asp	Tyr	Gly	Leu	His	Gly	Leu	Leu	Pro	Lys	Ser	Leu	Tyr	Leu		
		35					40					45					
Glu	Ala	Ile	Asn	Ser	Asp	Ile	Leu	Asn	Val	Arg	Phe	Phe	Pro	Pro	Glu		
	50					55					60						
Ile	Ile	Asn	Val	Thr	Asp	Ile	Val	Lys	Ala	Leu	Gln	Asn	Ser	Cys	Arg		
65					70					75					80		
Val	Asp	Glu	Tyr	Leu	Lys	Ala	Val	Ser	Leu	Tyr	His	Lys	Asn	Ser	Leu		
				85				90						95			
Met	Val	Leu	Gly	Pro	Asn	Val	Val	Lys	Leu	Met	Ile	Glu	Tyr	Asn	Leu		
			100					105					110				
Leu	Thr	His	Ser	Asp	Leu	Glu	Trp	Leu	Ile	Asn	Glu	Asn	Val	Val	Lys		
	115						120					125					
Ala	Thr	Tyr	Leu	Leu	Lys	Ile	Asn	Ala	Tyr	Met	Ile	Asn	Phe	Lys	Ile		
	130						135					140					
Asp	Leu	Thr	Val	Asp	Glu	Ile	Ile	Asp	Leu	Val	Lys	Asp	Ile	Pro	Val		
145					150					155					160		
Gly	Ala	Thr	Leu	His	Leu	Tyr	Asn	Ile	Leu	Asn	Asn	Ile	Asp	Leu	Asp		
				165				170						175			
Ile	Val	Leu	Arg	Ile	Ser	Asp	Glu	Tyr	Asn	Ile	Pro	Pro	Val	His	Asp		
			180					185					190				
Ile	Leu	Ser	Lys	Leu	Thr	Asp	Glu	Met	Cys	Ile	Lys	Leu	Val	Thr			
	195						200					205					
Lys	Tyr	Pro	Met	Asp	Asn	Val	Ile	Asn	Phe	Ile	Asn	Gln	Asp	Val	Arg		
	210					215					220						
Tyr	Ser	Pro	Thr	Phe	Ile	Lys	Thr	Ile	Lys	Asp	Phe	Val	Asn	Lys	His		
225					230					235					240		
Leu	Pro	Thr	Met	Tyr	Asp	Gly	Leu	Asn	Asp	Tyr	Leu	His	Ser	Val	Ile		
				245					250					255			
Ile	Asp	Glu	Asp	Leu	Ile	Glu	Glu	Tyr	Lys	Ile	Lys	Ser	Val	Ala	Met		
			260					265					270				
Phe	Asn	Leu	Glu	Tyr	Lys	Thr	Asp	Val	Asp	Thr	Leu	Thr	Leu	Asp	Glu		
	275						280					285					
Gln	Ile	Phe	Val	Glu	Val	Asn	Ile	Ser	Tyr	Tyr	Asp	Phe	Arg	Tyr	Arg		
	290					295					300						
Gln	Phe	Ala	Asp	Glu	Phe	Arg	Asp	Tyr	Ile	Met	Ile	Lys	Glu	Arg	Arg		
305					310					315					320		
Gln	Ile	Thr	Met	Gln	Ser	Gly	Asp	Arg	Ile	Arg	Arg	Phe	Arg	Arg	Pro		
				325					330					335			
Met	Ser	Leu	Arg	Ser	Thr	Ile	Ile	Lys	Lys	Asp	Thr	Asp	Ser	Leu	Glu		
			340					345					350				
Asp	Ile	Leu	Ala	His	Ile	Asp	Asn	Ala	Arg	Lys	Asn	Ser	Lys	Val	Ser		
		355					360					365					
Ile	Glu	Asp	Val	Glu	Arg	Ile	Ile	Ser	Ser	Phe	Arg	Leu	Asn	Pro	Cys		
	370					375					380						
Val	Val	Arg	Arg	Thr	Met	Leu	Ser	Asp	Ile	Asp	Ile	Lys	Thr	Lys	Ile		
385					390					395					400		
Met	Val	Leu	Lys	Ile	Val	Lys	Asp	Trp	Lys	Ser	Cys	Ala	Leu	Thr	Leu		
				405					410					415			
Ser	Ala	Ile	Lys	Gly	Ile	Met	Val	Thr	Asp	Thr	Ile	Asn	Thr	Val	Leu		
			420					425					430				
Ser	Lys	Ile	Leu	His	His	His	Arg	Asn	Val	Phe	Lys	Tyr	Leu	Thr	Ser		
		435					440					445					
Val	Glu	Asn	Lys	Glu	Ile	Ala	Val	Cys	Asn	Cys	Ser	Arg	Cys	Leu	Ser		
	450					455					460						
Leu	Phe	Tyr	Arg	Glu	Leu	Lys	Ser	Val	Arg	Cys	Asp	Leu	Arg	Thr	Asp		
465					470					475					480		

Asp	Gly	Leu	Leu	Asp	Arg	Leu	Tyr	Asp	Leu	Thr	Arg	Tyr	Ala	Leu	His
				485					490					495	
Gly	Lys	Ile	Asn	Gln	Asn	Leu	Ile	Gly	Gln	Arg	Cys	Trp	Gly	Pro	Leu
			500					505					510		
Thr	Glu	Met	Leu	Phe	Asn	Glu	Asn	Lys	Lys	Lys	Lys	Leu	Asn	Asn	Leu
		515					520					525			
Met	Glu	Tyr	Ile	Lys	Ile	Ser	Asp	Met	Leu	Val	Tyr	Gly	His	Ser	Ile
		530				535					540				
Glu	Lys	Thr	Leu	Ile	Pro	Ile	Thr	Asp	Ser	Leu	Ser	Phe	Lys	Leu	Ser
545					550					555					560
Val	Asp	Thr	Met	Ser	Val	Leu	Asn	Asp	Gln	Tyr	Ala	Lys	Val	Val	Ile
				565					570					575	
Phe	Phe	Asn	Thr	Ile	Ile	Glu	Tyr	Ile	Ile	Ala	Thr	Ile	Tyr	Tyr	Arg
			580					585					590		
Leu	Thr	Val	Leu	Asp	Asn	Tyr	Thr	Asn	Val	Lys	His	Phe	Val	Ser	Lys
		595					600					605			
Val	Leu	His	Thr	Val	Met	Glu	Ala	Cys	Gly	Val	Leu	Phe	Ser	Tyr	Ile
	610					615				620					
Lys	Val	Asn	Asp	Lys	Ile	Glu	His	Glu	Leu	Glu	Glu	Met	Val	Asp	Lys
625					630					635					640
Gly	Thr	Val	Pro	Ser	Tyr	Leu	Tyr	His	Leu	Ser	Ile	Asn	Val	Ile	Ser
				645					650					655	
Ile	Ile	Leu	Asp	Asp	Ile	Asn	Gly	Thr	Arg						
			660					665							

<210> 155
 <211> 324
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(324)

<400> 155	
atg gcc gag gaa ttt gta caa caa agg ttg gcc aat aac aaa gtg aca	48
Met Ala Glu Glu Phe Val Gln Gln Arg Leu Ala Asn Asn Lys Val Thr	
1 5 10 15	
att ttt gtc aag tat aca tgt cct ttt tgt aga aat gca ctg gat att	96
Ile Phe Val Lys Tyr Thr Cys Pro Phe Cys Arg Asn Ala Leu Asp Ile	
20 25 30	
cta aat aag ttt agt ttc aaa aga gga gcg tat gaa att gtc gat att	144
Leu Asn Lys Phe Ser Phe Lys Arg Gly Ala Tyr Glu Ile Val Asp Ile	
35 40 45	
aaa gaa ttt aaa ccc gaa aat gaa ttg cgg gat tat ttt gaa caa att	192
Lys Glu Phe Lys Pro Glu Asn Glu Leu Arg Asp Tyr Phe Glu Gln Ile	
50 55 60	
act ggt ggt aga act gtt cct aga atc ttt ttt ggg aaa act tct att	240
Thr Gly Gly Arg Thr Val Pro Arg Ile Phe Phe Gly Lys Thr Ser Ile	
65 70 75 80	
ggt gga tat agc gac ctg ttg gaa ata gac aac atg gac gca ttg ggt	288
Gly Gly Tyr Ser Asp Leu Leu Glu Ile Asp Asn Met Asp Ala Leu Gly	
85 90 95	

gat att cta tca tct att ggg gta ttg aga act tgt
 Asp Ile Leu Ser Ser Ile Gly Val Leu Arg Thr Cys
 100 105

324

<210> 156
 <211> 108
 <212> PRT
 <213> vaccinia virus

<400> 156
 Met Ala Glu Glu Phe Val Gln Gln Arg Leu Ala Asn Asn Lys Val Thr
 1 5 10 15
 Ile Phe Val Lys Tyr Thr Cys Pro Phe Cys Arg Asn Ala Leu Asp Ile
 20 25 30
 Leu Asn Lys Phe Ser Phe Lys Arg Gly Ala Tyr Glu Ile Val Asp Ile
 35 40 45
 Lys Glu Phe Lys Pro Glu Asn Glu Leu Arg Asp Tyr Phe Glu Gln Ile
 50 55 60
 Thr Gly Gly Arg Thr Val Pro Arg Ile Phe Phe Gly Lys Thr Ser Ile
 65 70 75 80
 Gly Gly Tyr Ser Asp Leu Leu Glu Ile Asp Asn Met Asp Ala Leu Gly
 85 90 95
 Asp Ile Leu Ser Ser Ile Gly Val Leu Arg Thr Cys
 100 105

<210> 157
 <211> 936
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(936)

<400> 157
 atg gcg gaa ttt gaa gat caa ctc gtt ttc aat agt atc agt gcc cgt 48
 Met Ala Glu Phe Glu Asp Gln Leu Val Phe Asn Ser Ile Ser Ala Arg
 1 5 10 15
 gca ttg aaa gct tat ttc act gct aaa atc aat gaa atg gta gat gag 96
 Ala Leu Lys Ala Tyr Phe Thr Ala Lys Ile Asn Glu Met Val Asp Glu
 20 25 30
 ttg gtc aca aga aaa tgt cca caa aag aaa aaa tca caa gct aag aaa 144
 Leu Val Thr Arg Lys Cys Pro Gln Lys Lys Lys Ser Gln Ala Lys Lys
 35 40 45
 cct gaa gta cgc att cct gta gat ctt gta aag tct agt ttt gtg aaa 192
 Pro Glu Val Arg Ile Pro Val Asp Leu Val Lys Ser Ser Phe Val Lys
 50 55 60
 aag ttt gga ttg tgc aat tat gga gga atc ctt atc agt ctt att aat 240
 Lys Phe Gly Leu Cys Asn Tyr Gly Gly Ile Leu Ile Ser Leu Ile Asn
 65 70 75 80
 agt cta gta gaa aat aat ttc ttt aca aag gat gga aaa ctg gat gat 288

Ser	Leu	Val	Glu	Asn	Asn	Phe	Phe	Thr	Lys	Asp	Gly	Lys	Leu	Asp	Asp	
				85					90					95		
aca	ggc	aaa	aag	gaa	ttg	gtt	ttg	aca	gat	gtc	gaa	aaa	cga	att	ctt	336
Thr	Gly	Lys	Lys	Glu	Leu	Val	Leu	Thr	Asp	Val	Glu	Lys	Arg	Ile	Leu	
			100					105					110			
aat	gcc	atc	gat	aaa	tca	tct	cct	ttg	tat	atc	gat	att	agt	gat	gtt	384
Asn	Ala	Ile	Asp	Lys	Ser	Ser	Pro	Leu	Tyr	Ile	Asp	Ile	Ser	Asp	Val	
		115					120					125				
aaa	gta	ttg	gct	gct	aga	cta	aaa	aga	agc	gct	aca	caa	ttt	aac	ttt	432
Lys	Val	Leu	Ala	Ala	Arg	Leu	Lys	Arg	Ser	Ala	Thr	Gln	Phe	Asn	Phe	
	130					135					140					
aat	gga	cat	aca	tat	cat	ctg	gaa	aat	gat	aaa	ata	gaa	gat	ctc	att	480
Asn	Gly	His	Thr	Tyr	His	Leu	Glu	Asn	Asp	Lys	Ile	Glu	Asp	Leu	Ile	
145					150					155					160	
aat	cag	ttg	gtt	aag	gac	gaa	tcc	att	caa	ctg	gat	gaa	aag	agt	tct	528
Asn	Gln	Leu	Val	Lys	Asp	Glu	Ser	Ile	Gln	Leu	Asp	Glu	Lys	Ser	Ser	
				165					170					175		
att	aaa	gat	agt	atg	tat	gtc	att	ccc	gat	gaa	ctt	atc	gat	gtt	ctc	576
Ile	Lys	Asp	Ser	Met	Tyr	Val	Ile	Pro	Asp	Glu	Leu	Ile	Asp	Val	Leu	
			180					185					190			
aaa	act	aga	ttg	ttt	aga	tct	cct	caa	gtc	aag	gat	aat	att	att	tcg	624
Lys	Thr	Arg	Leu	Phe	Arg	Ser	Pro	Gln	Val	Lys	Asp	Asn	Ile	Ile	Ser	
		195					200					205				
cgt	act	aga	ttg	tat	gat	tat	ttt	act	aga	gtt	act	aag	aga	gac	gaa	672
Arg	Thr	Arg	Leu	Tyr	Asp	Tyr	Phe	Thr	Arg	Val	Thr	Lys	Arg	Asp	Glu	
	210					215					220					
tcg	tca	atc	tat	gtg	att	cta	aag	gat	cct	agg	atc	gct	agc	att	ttg	720
Ser	Ser	Ile	Tyr	Val	Ile	Leu	Lys	Asp	Pro	Arg	Ile	Ala	Ser	Ile	Leu	
225					230					235					240	
tca	cta	gaa	act	gtt	aaa	atg	ggc	gcc	ttt	atg	tat	aca	aaa	cat	agt	768
Ser	Leu	Glu	Thr	Val	Lys	Met	Gly	Ala	Phe	Met	Tyr	Thr	Lys	His	Ser	
				245				250						255		
atg	ttg	acg	aac	gct	att	tca	tct	aga	gtc	gat	aga	tat	tct	aaa	aag	816
Met	Leu	Thr	Asn	Ala	Ile	Ser	Ser	Arg	Val	Asp	Arg	Tyr	Ser	Lys	Lys	
			260					265					270			
ttt	caa	gaa	tct	ttt	tac	gaa	gat	att	gca	gaa	ttt	gtt	aaa	gaa	aat	864
Phe	Gln	Glu	Ser	Phe	Tyr	Glu	Asp	Ile	Ala	Glu	Phe	Val	Lys	Glu	Asn	
		275					280					285				
gag	aga	gtt	aat	gta	tcg	aga	gtg	gtt	gaa	tgt	ttg	act	gtg	cct	aat	912
Glu	Arg	Val	Asn	Val	Ser	Arg	Val	Val	Glu	Cys	Leu	Thr	Val	Pro	Asn	
	290					295					300					
att	act	ata	tca	agt	aat	gct	gaa									936
Ile	Thr	Ile	Ser	Ser	Asn	Ala	Glu									
305					310											

<210> 158
 <211> 312
 <212> PRT
 <213> vaccinia virus

<400> 158
 Met Ala Glu Phe Glu Asp Gln Leu Val Phe Asn Ser Ile Ser Ala Arg
 1 5 10 15
 Ala Leu Lys Ala Tyr Phe Thr Ala Lys Ile Asn Glu Met Val Asp Glu
 20 25 30
 Leu Val Thr Arg Lys Cys Pro Gln Lys Lys Lys Ser Gln Ala Lys Lys
 35 40 45
 Pro Glu Val Arg Ile Pro Val Asp Leu Val Lys Ser Ser Phe Val Lys
 50 55 60
 Lys Phe Gly Leu Cys Asn Tyr Gly Gly Ile Leu Ile Ser Leu Ile Asn
 65 70 75 80
 Ser Leu Val Glu Asn Asn Phe Phe Thr Lys Asp Gly Lys Leu Asp Asp
 85 90 95
 Thr Gly Lys Lys Glu Leu Val Leu Thr Asp Val Glu Lys Arg Ile Leu
 100 105 110
 Asn Ala Ile Asp Lys Ser Ser Pro Leu Tyr Ile Asp Ile Ser Asp Val
 115 120 125
 Lys Val Leu Ala Ala Arg Leu Lys Arg Ser Ala Thr Gln Phe Asn Phe
 130 135 140
 Asn Gly His Thr Tyr His Leu Glu Asn Asp Lys Ile Glu Asp Leu Ile
 145 150 155 160
 Asn Gln Leu Val Lys Asp Glu Ser Ile Gln Leu Asp Glu Lys Ser Ser
 165 170 175
 Ile Lys Asp Ser Met Tyr Val Ile Pro Asp Glu Leu Ile Asp Val Leu
 180 185 190
 Lys Thr Arg Leu Phe Arg Ser Pro Gln Val Lys Asp Asn Ile Ile Ser
 195 200 205
 Arg Thr Arg Leu Tyr Asp Tyr Phe Thr Arg Val Thr Lys Arg Asp Glu
 210 215 220
 Ser Ser Ile Tyr Val Ile Leu Lys Asp Pro Arg Ile Ala Ser Ile Leu
 225 230 235 240
 Ser Leu Glu Thr Val Lys Met Gly Ala Phe Met Tyr Thr Lys His Ser
 245 250 255
 Met Leu Thr Asn Ala Ile Ser Ser Arg Val Asp Arg Tyr Ser Lys Lys
 260 265 270
 Phe Gln Glu Ser Phe Tyr Glu Asp Ile Ala Glu Phe Val Lys Glu Asn
 275 280 285
 Glu Arg Val Asn Val Ser Arg Val Val Glu Cys Leu Thr Val Pro Asn
 290 295 300
 Ile Thr Ile Ser Ser Asn Ala Glu
 305 310

<210> 159
 <211> 219
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(219)

<400> 159
 atg gat aag ttg tac gcc gct ata ttt ggt gta tat atg ggt tct ccg 48

Met	Asp	Lys	Leu	Tyr	Ala	Ala	Ile	Phe	Gly	Val	Tyr	Met	Gly	Ser	Pro	
1				5					10					15		
aaa	gat	gat	ttg	aca	gac	ttt	ata	gaa	att	gtt	aaa	tct	gtt	cta	agt	96
Lys	Asp	Asp	Leu	Thr	Asp	Phe	Ile	Glu	Ile	Val	Lys	Ser	Val	Leu	Ser	
			20					25					30			
gat	gag	aaa	act	acc	aca	tca	act	aat	aat	acc	ggg	tgt	tgg	ggg	tgg	144
Asp	Glu	Lys	Thr	Thr	Thr	Ser	Thr	Asn	Asn	Thr	Gly	Cys	Trp	Gly	Trp	
		35					40					45				
tat	tgg	tta	att	att	att	ttt	ttt	ata	gtt	ctt	att	cta	cta	cta	ttg	192
Tyr	Trp	Leu	Ile	Ile	Ile	Phe	Phe	Ile	Val	Leu	Ile	Leu	Leu	Leu	Leu	
	50					55					60					
ata	tat	ttg	tat	tta	aaa	gtt	gtt	tgg								219
Ile	Tyr	Leu	Tyr	Leu	Lys	Val	Val	Trp								
65					70											

<210> 160
 <211> 73
 <212> PRT
 <213> vaccinia virus

Met	Asp	Lys	Leu	Tyr	Ala	Ala	Ile	Phe	Gly	Val	Tyr	Met	Gly	Ser	Pro	
1				5					10					15		
Lys	Asp	Asp	Leu	Thr	Asp	Phe	Ile	Glu	Ile	Val	Lys	Ser	Val	Leu	Ser	
			20					25					30			
Asp	Glu	Lys	Thr	Thr	Thr	Ser	Thr	Asn	Asn	Thr	Gly	Cys	Trp	Gly	Trp	
		35					40					45				
Tyr	Trp	Leu	Ile	Ile	Ile	Phe	Phe	Ile	Val	Leu	Ile	Leu	Leu	Leu	Leu	
	50					55					60					
Ile	Tyr	Leu	Tyr	Leu	Lys	Val	Val	Trp								
65					70											

<210> 161
 <211> 810
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(810)

atg	agt	aag	gta	atc	aag	aag	aga	gtt	gaa	act	tca	cca	aga	cct	act	48
Met	Ser	Lys	Val	Ile	Lys	Lys	Arg	Val	Glu	Thr	Ser	Pro	Arg	Pro	Thr	
1				5					10					15		
gca	tct	agc	gat	tct	cta	cag	act	tgt	gcg	ggg	gtt	ata	gag	tat	gca	96
Ala	Ser	Ser	Asp	Ser	Leu	Gln	Thr	Cys	Ala	Gly	Val	Ile	Glu	Tyr	Ala	
			20					25					30			
aaa	tcg	att	agt	aaa	tct	aat	gca	aaa	tgt	atc	gaa	tac	gtt	aca	cta	144
Lys	Ser	Ile	Ser	Lys	Ser	Asn	Ala	Lys	Cys	Ile	Glu	Tyr	Val	Thr	Leu	
		35					40					45				

aat gct tct caa tac gct aat tgt tcg tct atc tct ata aaa ctt act	192
Asn Ala Ser Gln Tyr Ala Asn Cys Ser Ser Ile Ser Ile Lys Leu Thr	
50 55 60	
gat agt tta tct agt caa atg act tcc act ttt att atg ttg gaa gga	240
Asp Ser Leu Ser Ser Gln Met Thr Ser Thr Phe Ile Met Leu Glu Gly	
65 70 75 80	
gag act aaa ctt tat aaa aat aaa tct aaa caa gat aga agc gat gga	288
Glu Thr Lys Leu Tyr Lys Asn Lys Ser Lys Gln Asp Arg Ser Asp Gly	
85 90 95	
tac ttt cta aaa ata aaa gtt acc gcg gct agt cct atg ttg tat caa	336
Tyr Phe Leu Lys Ile Lys Val Thr Ala Ala Ser Pro Met Leu Tyr Gln	
100 105 110	
ctt cta gaa gcc gtc tat gga aac att aag cac aag gaa cgc att cca	384
Leu Leu Glu Ala Val Tyr Gly Asn Ile Lys His Lys Glu Arg Ile Pro	
115 120 125	
aat tct ttg cat agt ctt tcg gtg gaa act att aca gag aaa aca ttt	432
Asn Ser Leu His Ser Leu Ser Val Glu Thr Ile Thr Glu Lys Thr Phe	
130 135 140	
aag gat gaa tcc atc ttc atc aac aaa tta aac gga tcc atg gta gaa	480
Lys Asp Glu Ser Ile Phe Ile Asn Lys Leu Asn Gly Ser Met Val Glu	
145 150 155 160	
tat gtt tcg act gga gaa tca tcc att ctc aga tct ata gaa ggt gaa	528
Tyr Val Ser Thr Gly Glu Ser Ser Ile Leu Arg Ser Ile Glu Gly Glu	
165 170 175	
cta gaa tca ctc agt aaa aga gaa aga caa ttg gcc aag gca att atc	576
Leu Glu Ser Leu Ser Lys Arg Glu Arg Gln Leu Ala Lys Ala Ile Ile	
180 185 190	
aca cct gta gtt ttc tat aga tcc gga acg gaa aca aaa att aca ttc	624
Thr Pro Val Val Phe Tyr Arg Ser Gly Thr Glu Thr Lys Ile Thr Phe	
195 200 205	
gca ctc aag aaa cta atc att gat aga gaa gtg gtg gct aac gtt atc	672
Ala Leu Lys Lys Leu Ile Ile Asp Arg Glu Val Val Ala Asn Val Ile	
210 215 220	
gga ctc tct gga gat agt gaa cgt gta tca atg act gaa aat gta gaa	720
Gly Leu Ser Gly Asp Ser Glu Arg Val Ser Met Thr Glu Asn Val Glu	
225 230 235 240	
gaa gat ctg gct cgt aat ctg gga ctt gtt gat att gat gat gaa tat	768
Glu Asp Leu Ala Arg Asn Leu Gly Leu Val Asp Ile Asp Asp Glu Tyr	
245 250 255	
gat gaa gat agc gat aaa gaa aag cca ata ttc aat gta taa	810
Asp Glu Asp Ser Asp Lys Glu Lys Pro Ile Phe Asn Val *	
260 265	

<210> 162
 <211> 269
 <212> PRT
 <213> vaccinia virus

<400> 162
 Met Ser Lys Val Ile Lys Lys Arg Val Glu Thr Ser Pro Arg Pro Thr
 1 5 10 15
 Ala Ser Ser Asp Ser Leu Gln Thr Cys Ala Gly Val Ile Glu Tyr Ala
 20 25 30
 Lys Ser Ile Ser Lys Ser Asn Ala Lys Cys Ile Glu Tyr Val Thr Leu
 35 40 45
 Asn Ala Ser Gln Tyr Ala Asn Cys Ser Ser Ile Ser Ile Lys Leu Thr
 50 55 60
 Asp Ser Leu Ser Ser Gln Met Thr Ser Thr Phe Ile Met Leu Glu Gly
 65 70 75 80
 Glu Thr Lys Leu Tyr Lys Asn Lys Ser Lys Gln Asp Arg Ser Asp Gly
 85 90 95
 Tyr Phe Leu Lys Ile Lys Val Thr Ala Ala Ser Pro Met Leu Tyr Gln
 100 105 110
 Leu Leu Glu Ala Val Tyr Gly Asn Ile Lys His Lys Glu Arg Ile Pro
 115 120 125
 Asn Ser Leu His Ser Leu Ser Val Glu Thr Ile Thr Glu Lys Thr Phe
 130 135 140
 Lys Asp Glu Ser Ile Phe Ile Asn Lys Leu Asn Gly Ser Met Val Glu
 145 150 155 160
 Tyr Val Ser Thr Gly Glu Ser Ser Ile Leu Arg Ser Ile Glu Gly Glu
 165 170 175
 Leu Glu Ser Leu Ser Lys Arg Glu Arg Gln Leu Ala Lys Ala Ile Ile
 180 185 190
 Thr Pro Val Val Phe Tyr Arg Ser Gly Thr Glu Thr Lys Ile Thr Phe
 195 200 205
 Ala Leu Lys Lys Leu Ile Ile Asp Arg Glu Val Val Ala Asn Val Ile
 210 215 220
 Gly Leu Ser Gly Asp Ser Glu Arg Val Ser Met Thr Glu Asn Val Glu
 225 230 235 240
 Glu Asp Leu Ala Arg Asn Leu Gly Leu Val Asp Ile Asp Asp Glu Tyr
 245 250 255
 Asp Glu Asp Ser Asp Lys Glu Lys Pro Ile Phe Asn Val
 260 265

<210> 163
 <211> 2313
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(2313)

<400> 163
 atg ttt gtc att aaa cga aat gga tac aag gaa aat gtc atg ttt gat 48
 Met Phe Val Ile Lys Arg Asn Gly Tyr Lys Glu Asn Val Met Phe Asp
 1 5 10 15
 aaa atc acg tct cgt att aga aaa tta tgt tat ggc tta aac acg gat 96
 Lys Ile Thr Ser Arg Ile Arg Lys Leu Cys Tyr Gly Leu Asn Thr Asp
 20 25 30

cat ata gat cct att aaa ata gct atg aag gtt att caa gga ata tat	144
His Ile Asp Pro Ile Lys Ile Ala Met Lys Val Ile Gln Gly Ile Tyr	
35 40 45	
aat gga gta aca acg gta gaa ttg gac act ctg gca gcc gaa ata gca	192
Asn Gly Val Thr Thr Val Glu Leu Asp Thr Leu Ala Ala Glu Ile Ala	
50 55 60	
gcc act tgt act aca caa cat ccg gat tat gcc att cta gcc gcc aga	240
Ala Thr Cys Thr Thr Gln His Pro Asp Tyr Ala Ile Leu Ala Ala Arg	
65 70 75 80	
ata gcc gta tca aat cta cac aag gaa aca aaa aaa cta ttt agt gaa	288
Ile Ala Val Ser Asn Leu His Lys Glu Thr Lys Lys Leu Phe Ser Glu	
85 90 95	
gtg atg gag gat tta ttc aac tat gtt aat cct aaa aat ggg aaa cat	336
Val Met Glu Asp Leu Phe Asn Tyr Val Asn Pro Lys Asn Gly Lys His	
100 105 110	
tct ccg att att tca agt atc acc atg gat ata gtt aac aaa tat aag	384
Ser Pro Ile Ile Ser Ser Ile Thr Met Asp Ile Val Asn Lys Tyr Lys	
115 120 125	
gat aaa ctc aac tcg gtt att att tac gaa cga gac ttt tca tac aac	432
Asp Lys Leu Asn Ser Val Ile Ile Tyr Glu Arg Asp Phe Ser Tyr Asn	
130 135 140	
tat ttt ggt ttt aaa act ttg gaa aaa tcc tac ttg ttg aaa ata aac	480
Tyr Phe Gly Phe Lys Thr Leu Glu Lys Ser Tyr Leu Leu Lys Ile Asn	
145 150 155 160	
aac aag atc gtt gaa aga cct cag cac atg tta atg cgt gtc gca gta	528
Asn Lys Ile Val Glu Arg Pro Gln His Met Leu Met Arg Val Ala Val	
165 170 175	
gga att cat caa tgg gat ata gac tca gct att gag acg tac aat cta	576
Gly Ile His Gln Trp Asp Ile Asp Ser Ala Ile Glu Thr Tyr Asn Leu	
180 185 190	
ctt tct gaa aaa tgg ttt acg cac gct tct cct acc tta ttt aat gcg	624
Leu Ser Glu Lys Trp Phe Thr His Ala Ser Pro Thr Leu Phe Asn Ala	
195 200 205	
gga act agt cgt cac caa atg tct agc tgt ttt cta ctt aac atg atc	672
Gly Thr Ser Arg His Gln Met Ser Ser Cys Phe Leu Leu Asn Met Ile	
210 215 220	
gat gat agc ata gag ggt atc tat gac acg tta aaa cga tgc gca tta	720
Asp Asp Ser Ile Glu Gly Ile Tyr Asp Thr Leu Lys Arg Cys Ala Leu	
225 230 235 240	
atc tct aaa atg gca ggg gga ata ggt cta tca att agt aat att cgt	768
Ile Ser Lys Met Ala Gly Gly Ile Gly Leu Ser Ile Ser Asn Ile Arg	
245 250 255	
gcc agt gga agc tat atc tcc ggt acc aat ggt ata tca aac ggt att	816
Ala Ser Gly Ser Tyr Ile Ser Gly Thr Asn Gly Ile Ser Asn Gly Ile	

260										265										270										
att	cca	atg	ttg	aga	gtt	tat	aat	aac	acc	gct	aga	tac	ata	gat	cag	864														
Ile	Pro	Met	Leu	Arg	Val	Tyr	Asn	Asn	Thr	Ala	Arg	Tyr	Ile	Asp	Gln															
		275																												
gga	gga	aac	aaa	cgg	cct	gga	gtt	atg	gcc	ata	tac	ttg	gaa	ccg	tgg	912														
Gly	Gly	Asn	Lys	Arg	Pro	Gly	Val	Met	Ala	Ile	Tyr	Leu	Glu	Pro	Trp															
		290																												
cat	tct	gat	att	atg	gcg	ttc	ctc	gat	ctt	aaa	aag	aat	aca	gga	aac	960														
His	Ser	Asp	Ile	Met	Ala	Phe	Leu	Asp	Leu	Lys	Lys	Asn	Thr	Gly	Asn															
						310									320															
gag	gaa	cat	aga	acc	aga	gat	cta	ttt	ata	gct	ctt	tgg	att	cct	gat	1008														
Glu	Glu	His	Arg	Thr	Arg	Asp	Leu	Phe	Ile	Ala	Leu	Trp	Ile	Pro	Asp															
					325					330					335															
ctc	ttt	atg	aaa	cga	gtg	aag	gat	gac	gga	gag	tgg	tcg	ttg	atg	tgt	1056														
Leu	Phe	Met	Lys	Arg	Val	Lys	Asp	Asp	Gly	Glu	Trp	Ser	Leu	Met	Cys															
			340						345						350															
ccg	gat	gaa	tgt	cct	gga	ttg	gac	aat	gtt	tgg	gga	gac	gag	ttc	gaa	1104														
Pro	Asp	Glu	Cys	Pro	Gly	Leu	Asp	Asn	Val	Trp	Gly	Asp	Glu	Phe	Glu															
			355					360					365																	
cga	ttg	tat	aca	cta	tac	gaa	aga	gaa	agg	aga	tac	aaa	tct	ata	ata	1152														
Arg	Leu	Tyr	Thr	Leu	Tyr	Glu	Arg	Glu	Arg	Arg	Tyr	Lys	Ser	Ile	Ile															
								375																						
aag	gct	cga	gtc	gtc	tgg	aaa	gcg	att	ata	gaa	tct	cag	att	gaa	act	1200														
Lys	Ala	Arg	Val	Val	Trp	Lys	Ala	Ile	Ile	Glu	Ser	Gln	Ile	Glu	Thr															
					390										400															
ggt	act	cca	ttc	att	ctt	tat	aag	gat	gcg	tgt	aac	aaa	aag	agt	aat	1248														
Gly	Thr	Pro	Phe	Ile	Leu	Tyr	Lys	Asp	Ala	Cys	Asn	Lys	Lys	Ser	Asn															
					405										415															
caa	caa	aat	tta	gga	act	atc	aag	tgt	agt	aat	ctt	tgc	act	gag	ata	1296														
Gln	Gln	Asn	Leu	Gly	Thr	Ile	Lys	Cys	Ser	Asn	Leu	Cys	Thr	Glu	Ile															
					420										430															
ata	caa	tat	gcg	gat	gct	aat	gag	gta	gcc	gtt	tgt	aat	ctg	gca	tct	1344														
Ile	Gln	Tyr	Ala	Asp	Ala	Asn	Glu	Val	Ala	Val	Cys	Asn	Leu	Ala	Ser															
								440																						
gtt	gcc	ttg	aac	atg	ttt	gta	ata	gat	ggg	cga	ttt	gat	ttt	ctc	aaa	1392														
Val	Ala	Leu	Asn	Met	Phe	Val	Ile	Asp	Gly	Arg	Phe	Asp	Phe	Leu	Lys															
								455																						
ctg	aag	gat	gtg	gtc	aaa	gta	att	gtc	aga	aat	ctc	aat	aaa	att	ata	1440														
Leu	Lys	Asp	Val	Val	Lys	Val	Ile	Val	Arg	Asn	Leu	Asn	Lys	Ile	Ile															
					470										480															
gat	att	aat	tat	tat	cct	att	cca	gaa	gct	gaa	atc	tct	aat	aag	aga	1488														
Asp	Ile	Asn	Tyr	Tyr	Pro	Ile	Pro	Glu	Ala	Glu	Ile	Ser	Asn	Lys	Arg															
					485										495															
cat	aga	cct	atc	ggt	att	ggt	gtt	caa	gga	tta	gcg	gac	gcg	ttt	att	1536														

His	Arg	Pro	Ile	Gly	Ile	Gly	Val	Gln	Gly	Leu	Ala	Asp	Ala	Phe	Ile		
			500					505					510				
ctc	tta	aat	tat	cca	ttt	gat	agc	ctg	gaa	gca	caa	gat	cta	aat	aag	1584	
Leu	Leu	Asn	Tyr	Pro	Phe	Asp	Ser	Leu	Glu	Ala	Gln	Asp	Leu	Asn	Lys		
		515					520					525					
aag	atc	ttc	gaa	acc	att	tat	tac	ggt	gca	tta	gag	gcg	agt	tgt	gaa	1632	
Lys	Ile	Phe	Glu	Thr	Ile	Tyr	Tyr	Gly	Ala	Leu	Glu	Ala	Ser	Cys	Glu		
	530					535					540						
cta	gct	gag	aag	gaa	gga	cca	tac	gat	aca	tat	gta	gga	tcg	tac	gcc	1680	
Leu	Ala	Glu	Lys	Glu	Gly	Pro	Tyr	Asp	Thr	Tyr	Val	Gly	Ser	Tyr	Ala		
545					550					555					560		
agt	aac	ggt	att	cta	caa	tat	gat	ctt	tgg	aat	gtt	gta	ccg	tcg	gat	1728	
Ser	Asn	Gly	Ile	Leu	Gln	Tyr	Asp	Leu	Trp	Asn	Val	Val	Pro	Ser	Asp		
				565					570					575			
ctt	tgg	aat	tgg	gaa	cct	cta	aaa	gat	aaa	atc	aga	aca	tac	ggt	ctt	1776	
Leu	Trp	Asn	Trp	Glu	Pro	Leu	Lys	Asp	Lys	Ile	Arg	Thr	Tyr	Gly	Leu		
			580					585					590				
aga	aat	agt	tta	ttg	gtg	gca	cct	atg	ccg	act	gca	tca	act	gct	caa	1824	
Arg	Asn	Ser	Leu	Leu	Val	Ala	Pro	Met	Pro	Thr	Ala	Ser	Thr	Ala	Gln		
		595				600					605						
att	ttg	gga	aat	aat	gag	tcg	gtg	gaa	ccg	tat	acc	agt	aat	att	tac	1872	
Ile	Leu	Gly	Asn	Asn	Glu	Ser	Val	Glu	Pro	Tyr	Thr	Ser	Asn	Ile	Tyr		
	610					615					620						
act	cgg	aga	gta	ttg	tct	gga	gaa	ttt	caa	gta	gtt	aat	ccg	cat	ctc	1920	
Thr	Arg	Arg	Val	Leu	Ser	Gly	Glu	Phe	Gln	Val	Val	Asn	Pro	His	Leu		
625					630				635						640		
ctt	aga	gtt	tta	acc	gag	aga	aaa	tta	tgg	aat	gat	gag	atc	aag	aat	1968	
Leu	Arg	Val	Leu	Thr	Glu	Arg	Lys	Leu	Trp	Asn	Asp	Glu	Ile	Lys	Asn		
				645					650					655			
agg	att	atg	gca	gat	ggt	gga	tcc	att	cag	aat	aca	aac	ctt	cca	gaa	2016	
Arg	Ile	Met	Ala	Asp	Gly	Gly	Ser	Ile	Gln	Asn	Thr	Asn	Leu	Pro	Glu		
			660				665						670				
gat	att	aag	cga	gtt	tat	aaa	act	att	tgg	gaa	att	cca	caa	aag	acg	2064	
Asp	Ile	Lys	Arg	Val	Tyr	Lys	Thr	Ile	Trp	Glu	Ile	Pro	Gln	Lys	Thr		
		675					680					685					
atc	ata	aaa	atg	gct	gca	gac	agg	gga	gcc	ttc	atc	gat	caa	agt	caa	2112	
Ile	Ile	Lys	Met	Ala	Ala	Asp	Arg	Gly	Ala	Phe	Ile	Asp	Gln	Ser	Gln		
	690					695					700						
tct	atg	aat	atc	cat	ata	gca	gat	ccg	agt	tat	tcc	aaa	cta	acg	agt	2160	
Ser	Met	Asn	Ile	His	Ile	Ala	Asp	Pro	Ser	Tyr	Ser	Lys	Leu	Thr	Ser		
705					710					715					720		
atg	cat	ttt	tac	gga	tgg	agt	ctc	ggt	cta	aaa	acg	gga	atg	tac	tat	2208	
Met	His	Phe	Tyr	Gly	Trp	Ser	Leu	Gly	Leu	Lys	Thr	Gly	Met	Tyr	Tyr		
				725					730					735			

cta	cgt	acg	aaa	ccc	gca	tcc	gct	ccc	att	caa	ttc	aca	ttg	gac	aag	2256
Leu	Arg	Thr	Lys	Pro	Ala	Ser	Ala	Pro	Ile	Gln	Phe	Thr	Leu	Asp	Lys	
			740					745					750			
gat	aaa	ata	aaa	cca	ctg	gtg	ggt	tgc	gat	tcc	gaa	atc	tgt	aca	tca	2304
Asp	Lys	Ile	Lys	Pro	Leu	Val	Val	Cys	Asp	Ser	Glu	Ile	Cys	Thr	Ser	
		755					760					765				
tgc	agt	ggt														2313
Cys	Ser	Gly														
		770														

<210> 164
 <211> 771
 <212> PRT
 <213> vaccinia virus

<400> 164																
Met	Phe	Val	Ile	Lys	Arg	Asn	Gly	Tyr	Lys	Glu	Asn	Val	Met	Phe	Asp	
1				5					10					15		
Lys	Ile	Thr	Ser	Arg	Ile	Arg	Lys	Leu	Cys	Tyr	Gly	Leu	Asn	Thr	Asp	
			20					25					30			
His	Ile	Asp	Pro	Ile	Lys	Ile	Ala	Met	Lys	Val	Ile	Gln	Gly	Ile	Tyr	
		35					40					45				
Asn	Gly	Val	Thr	Thr	Val	Glu	Leu	Asp	Thr	Leu	Ala	Ala	Glu	Ile	Ala	
		50				55					60					
Ala	Thr	Cys	Thr	Thr	Gln	His	Pro	Asp	Tyr	Ala	Ile	Leu	Ala	Ala	Arg	
65					70				75						80	
Ile	Ala	Val	Ser	Asn	Leu	His	Lys	Glu	Thr	Lys	Lys	Leu	Phe	Ser	Glu	
				85					90					95		
Val	Met	Glu	Asp	Leu	Phe	Asn	Tyr	Val	Asn	Pro	Lys	Asn	Gly	Lys	His	
			100					105					110			
Ser	Pro	Ile	Ile	Ser	Ser	Ile	Thr	Met	Asp	Ile	Val	Asn	Lys	Tyr	Lys	
		115					120					125				
Asp	Lys	Leu	Asn	Ser	Val	Ile	Ile	Tyr	Glu	Arg	Asp	Phe	Ser	Tyr	Asn	
		130				135					140					
Tyr	Phe	Gly	Phe	Lys	Thr	Leu	Glu	Lys	Ser	Tyr	Leu	Leu	Lys	Ile	Asn	
145					150				155						160	
Asn	Lys	Ile	Val	Glu	Arg	Pro	Gln	His	Met	Leu	Met	Arg	Val	Ala	Val	
				165					170					175		
Gly	Ile	His	Gln	Trp	Asp	Ile	Asp	Ser	Ala	Ile	Glu	Thr	Tyr	Asn	Leu	
			180					185					190			
Leu	Ser	Glu	Lys	Trp	Phe	Thr	His	Ala	Ser	Pro	Thr	Leu	Phe	Asn	Ala	
		195				200						205				
Gly	Thr	Ser	Arg	His	Gln	Met	Ser	Ser	Cys	Phe	Leu	Leu	Asn	Met	Ile	
		210				215					220					
Asp	Asp	Ser	Ile	Glu	Gly	Ile	Tyr	Asp	Thr	Leu	Lys	Arg	Cys	Ala	Leu	
225					230				235						240	
Ile	Ser	Lys	Met	Ala	Gly	Gly	Ile	Gly	Leu	Ser	Ile	Ser	Asn	Ile	Arg	
				245					250					255		
Ala	Ser	Gly	Ser	Tyr	Ile	Ser	Gly	Thr	Asn	Gly	Ile	Ser	Asn	Gly	Ile	
			260					265					270			
Ile	Pro	Met	Leu	Arg	Val	Tyr	Asn	Asn	Thr	Ala	Arg	Tyr	Ile	Asp	Gln	
		275					280					285				
Gly	Gly	Asn	Lys	Arg	Pro	Gly	Val	Met	Ala	Ile	Tyr	Leu	Glu	Pro	Trp	
		290				295					300					
His	Ser	Asp	Ile	Met	Ala	Phe	Leu	Asp	Leu	Lys	Lys	Asn	Thr	Gly	Asn	
305					310					315					320	

Glu	Glu	His	Arg	Thr	Arg	Asp	Leu	Phe	Ile	Ala	Leu	Trp	Ile	Pro	Asp	
				325					330					335		
Leu	Phe	Met	Lys	Arg	Val	Lys	Asp	Asp	Gly	Glu	Trp	Ser	Leu	Met	Cys	
			340					345					350			
Pro	Asp	Glu	Cys	Pro	Gly	Leu	Asp	Asn	Val	Trp	Gly	Asp	Glu	Phe	Glu	
		355					360					365				
Arg	Leu	Tyr	Thr	Leu	Tyr	Glu	Arg	Glu	Arg	Arg	Tyr	Lys	Ser	Ile	Ile	
	370					375					380					
Lys	Ala	Arg	Val	Val	Trp	Lys	Ala	Ile	Ile	Glu	Ser	Gln	Ile	Glu	Thr	
385					390					395					400	
Gly	Thr	Pro	Phe	Ile	Leu	Tyr	Lys	Asp	Ala	Cys	Asn	Lys	Lys	Ser	Asn	
			405						410					415		
Gln	Gln	Asn	Leu	Gly	Thr	Ile	Lys	Cys	Ser	Asn	Leu	Cys	Thr	Glu	Ile	
			420					425					430			
Ile	Gln	Tyr	Ala	Asp	Ala	Asn	Glu	Val	Ala	Val	Cys	Asn	Leu	Ala	Ser	
	435						440					445				
Val	Ala	Leu	Asn	Met	Phe	Val	Ile	Asp	Gly	Arg	Phe	Asp	Phe	Leu	Lys	
	450				455						460					
Leu	Lys	Asp	Val	Val	Lys	Val	Ile	Val	Arg	Asn	Leu	Asn	Lys	Ile	Ile	
465					470				475						480	
Asp	Ile	Asn	Tyr	Tyr	Pro	Ile	Pro	Glu	Ala	Glu	Ile	Ser	Asn	Lys	Arg	
			485					490						495		
His	Arg	Pro	Ile	Gly	Ile	Gly	Val	Gln	Gly	Leu	Ala	Asp	Ala	Phe	Ile	
		500						505					510			
Leu	Leu	Asn	Tyr	Pro	Phe	Asp	Ser	Leu	Glu	Ala	Gln	Asp	Leu	Asn	Lys	
	515					520						525				
Lys	Ile	Phe	Glu	Thr	Ile	Tyr	Tyr	Gly	Ala	Leu	Glu	Ala	Ser	Cys	Glu	
	530					535					540					
Leu	Ala	Glu	Lys	Glu	Gly	Pro	Tyr	Asp	Thr	Tyr	Val	Gly	Ser	Tyr	Ala	
545					550				555						560	
Ser	Asn	Gly	Ile	Leu	Gln	Tyr	Asp	Leu	Trp	Asn	Val	Val	Pro	Ser	Asp	
			565					570					575			
Leu	Trp	Asn	Trp	Glu	Pro	Leu	Lys	Asp	Lys	Ile	Arg	Thr	Tyr	Gly	Leu	
		580						585					590			
Arg	Asn	Ser	Leu	Leu	Val	Ala	Pro	Met	Pro	Thr	Ala	Ser	Thr	Ala	Gln	
		595				600					605					
Ile	Leu	Gly	Asn	Asn	Glu	Ser	Val	Glu	Pro	Tyr	Thr	Ser	Asn	Ile	Tyr	
	610				615						620					
Thr	Arg	Arg	Val	Leu	Ser	Gly	Glu	Phe	Gln	Val	Val	Asn	Pro	His	Leu	
625					630				635						640	
Leu	Arg	Val	Leu	Thr	Glu	Arg	Lys	Leu	Trp	Asn	Asp	Glu	Ile	Lys	Asn	
			645					650						655		
Arg	Ile	Met	Ala	Asp	Gly	Gly	Ser	Ile	Gln	Asn	Thr	Asn	Leu	Pro	Glu	
		660					665						670			
Asp	Ile	Lys	Arg	Val	Tyr	Lys	Thr	Ile	Trp	Glu	Ile	Pro	Gln	Lys	Thr	
	675						680					685				
Ile	Ile	Lys	Met	Ala	Ala	Asp	Arg	Gly	Ala	Phe	Ile	Asp	Gln	Ser	Gln	
	690					695					700					
Ser	Met	Asn	Ile	His	Ile	Ala	Asp	Pro	Ser	Tyr	Ser	Lys	Leu	Thr	Ser	
705					710					715					720	
Met	His	Phe	Tyr	Gly	Trp	Ser	Leu	Gly	Leu	Lys	Thr	Gly	Met	Tyr	Tyr	
			725					730					735			
Leu	Arg	Thr	Lys	Pro	Ala	Ser	Ala	Pro	Ile	Gln	Phe	Thr	Leu	Asp	Lys	
		740					745					750				
Asp	Lys	Ile	Lys	Pro	Leu	Val	Val	Cys	Asp	Ser	Glu	Ile	Cys	Thr	Ser	
	755					760					765					
Cys	Ser	Gly														
	770															

<210> 165
 <211> 237
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(237)

<400> 165
 atg gtg gat gct ata acc gtt cta act gcg atc ggc ata act gta tta 48
 Met Val Asp Ala Ile Thr Val Leu Thr Ala Ile Gly Ile Thr Val Leu
 1 5 10 15
 atg ctt ttg atg gta att tct ggc gcc gcc atg ata gtc aag gag tta 96
 Met Leu Leu Met Val Ile Ser Gly Ala Ala Met Ile Val Lys Glu Leu
 20 25 30
 aat cct aat gat ata ttc act atg caa tca tta aag ttt aat cga gcc 144
 Asn Pro Asn Asp Ile Phe Thr Met Gln Ser Leu Lys Phe Asn Arg Ala
 35 40 45
 gta acg att ttc aaa tat ata gga ctc ttt atc tat ata cca gga acg 192
 Val Thr Ile Phe Lys Tyr Ile Gly Leu Phe Ile Tyr Ile Pro Gly Thr
 50 55 60
 ata att ttg tac gct aca tac gtc aaa tcc cta tta atg aaa agt 237
 Ile Ile Leu Tyr Ala Thr Tyr Val Lys Ser Leu Leu Met Lys Ser
 65 70 75

<210> 166
 <211> 79
 <212> PRT
 <213> vaccinia virus

<400> 166
 Met Val Asp Ala Ile Thr Val Leu Thr Ala Ile Gly Ile Thr Val Leu
 1 5 10 15
 Met Leu Leu Met Val Ile Ser Gly Ala Ala Met Ile Val Lys Glu Leu
 20 25 30
 Asn Pro Asn Asp Ile Phe Thr Met Gln Ser Leu Lys Phe Asn Arg Ala
 35 40 45
 Val Thr Ile Phe Lys Tyr Ile Gly Leu Phe Ile Tyr Ile Pro Gly Thr
 50 55 60
 Ile Ile Leu Tyr Ala Thr Tyr Val Lys Ser Leu Leu Met Lys Ser
 65 70 75

<210> 167
 <211> 1146
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1146)

<400> 167

atg aat aac ttt gtt aaa caa gta gct tca aag tct cta aaa cct acc	48
Met Asn Asn Phe Val Lys Gln Val Ala Ser Lys Ser Leu Lys Pro Thr	
1 5 10 15	
aaa aaa ttg tct ccg tca gat gag gtg ata tct tta aac gaa tgc ata	96
Lys Lys Leu Ser Pro Ser Asp Glu Val Ile Ser Leu Asn Glu Cys Ile	
20 25 30	
ata tcc ttt aac ttg gat aac ttt tat tat tgc aac gat gta ctg ttt	144
Ile Ser Phe Asn Leu Asp Asn Phe Tyr Tyr Cys Asn Asp Val Leu Phe	
35 40 45	
act aag ccc att aat act ccg gag gat gtt ctc aaa tca ctc ttg atc	192
Thr Lys Pro Ile Asn Thr Pro Glu Asp Val Leu Lys Ser Leu Leu Ile	
50 55 60	
atg gaa tca ttc gcg tac gag aag atg ata atc aaa gga tta ata aaa	240
Met Glu Ser Phe Ala Tyr Glu Lys Met Ile Ile Lys Gly Leu Ile Lys	
65 70 75 80	
ata cta ata ttt aga gca tat att aat gat att tat ttt act cca ttc	288
Ile Leu Ile Phe Arg Ala Tyr Ile Asn Asp Ile Tyr Phe Thr Pro Phe	
85 90 95	
ggt tgg ttg acg ggc gtc gac gat gat cct gaa aca cac gtg gtg ata	336
Gly Trp Leu Thr Gly Val Asp Asp Asp Pro Glu Thr His Val Val Ile	
100 105 110	
aaa ata att ttc aat tca tca cta ata tct atc aag tct caa gtt ata	384
Lys Ile Ile Phe Asn Ser Ser Leu Ile Ser Ile Lys Ser Gln Val Ile	
115 120 125	
gaa tat tta aaa cca tac aat gtc aat aac cta tcg gta ctt acc aca	432
Glu Tyr Leu Lys Pro Tyr Asn Val Asn Asn Leu Ser Val Leu Thr Thr	
130 135 140	
gaa aaa gaa tta agt att aat acg ttc aat gtt ccg gat tct ata cct	480
Glu Lys Glu Leu Ser Ile Asn Thr Phe Asn Val Pro Asp Ser Ile Pro	
145 150 155 160	
atg tcg ata att tcg ttt ttc cca ttc gat aca gat ttt ata cta gtt	528
Met Ser Ile Ile Ser Phe Phe Pro Phe Asp Thr Asp Phe Ile Leu Val	
165 170 175	
att ttg ttt ttt gga gta tat aat gac tcg tat tgt gga ata agc tat	576
Ile Leu Phe Phe Gly Val Tyr Asn Asp Ser Tyr Cys Gly Ile Ser Tyr	
180 185 190	
ata agt ccg aaa gag aga cta ccg tat atc atc gaa ata tta aaa ccg	624
Ile Ser Pro Lys Glu Arg Leu Pro Tyr Ile Ile Glu Ile Leu Lys Pro	
195 200 205	
ttg gtg tcg gaa att aac atg tta tcg gat gaa ata ggt aga aca tca	672
Leu Val Ser Glu Ile Asn Met Leu Ser Asp Glu Ile Gly Arg Thr Ser	
210 215 220	
tcc att aga atc ttc aat tcc act agc gtc aaa aaa ttt cct act aat	720
Ser Ile Arg Ile Phe Asn Ser Thr Ser Val Lys Lys Phe Pro Thr Asn	

225	230	235	240	
aca tta aca tcc att tgt gaa att gtt tat tcg ttt gac gaa tca tcc				768
Thr Leu Thr Ser Ile Cys Glu Ile Val Tyr Ser Phe Asp Glu Ser Ser	245	250	255	
ttt ccg acg ccc aag acg ttc act cct cta aac gcg agt cca tac att				816
Phe Pro Thr Pro Lys Thr Phe Thr Pro Leu Asn Ala Ser Pro Tyr Ile	260	265	270	
cct aaa aag ata gtt tca cta ttg gat tta cca tct aat gtg gaa ata				864
Pro Lys Lys Ile Val Ser Leu Leu Asp Leu Pro Ser Asn Val Glu Ile	275	280	285	
aaa gcg ata tct aga ggc ggt gtg gat ttc atc act cat att aat aat				912
Lys Ala Ile Ser Arg Gly Gly Val Asp Phe Ile Thr His Ile Asn Asn	290	295	300	
aag cgt cta aac aca atc ttg gta ata gca aaa gat aac ttt tta aaa				960
Lys Arg Leu Asn Thr Ile Leu Val Ile Ala Lys Asp Asn Phe Leu Lys	305	310	315	320
aat tct aca ttt tct gga act ttt atc aaa gag aat att att tgg aag				1008
Asn Ser Thr Phe Ser Gly Thr Phe Ile Lys Glu Asn Ile Ile Trp Lys	325	330	335	
ggt atc tat act tat aga ata atc aag tct agt ttt cca gtt cct act				1056
Gly Ile Tyr Thr Tyr Arg Ile Ile Lys Ser Ser Phe Pro Val Pro Thr	340	345	350	
att aag tcg gtt act aat aag aaa aaa ata tgt aag aaa cat tgt ttc				1104
Ile Lys Ser Val Thr Asn Lys Lys Lys Ile Cys Lys Lys His Cys Phe	355	360	365	
gtc aat tct cag tat aca act agg act ttg tca cat att ctt				1146
Val Asn Ser Gln Tyr Thr Thr Arg Thr Leu Ser His Ile Leu	370	375	380	

<210> 168
 <211> 382
 <212> PRT
 <213> vaccinia virus

<400> 168

Met Asn Asn Phe Val Lys Gln Val Ala Ser Lys Ser Leu Lys Pro Thr				
1 5 10 15				
Lys Lys Leu Ser Pro Ser Asp Glu Val Ile Ser Leu Asn Glu Cys Ile	20	25	30	
Ile Ser Phe Asn Leu Asp Asn Phe Tyr Tyr Cys Asn Asp Val Leu Phe	35	40	45	
Thr Lys Pro Ile Asn Thr Pro Glu Asp Val Leu Lys Ser Leu Leu Ile	50	55	60	
Met Glu Ser Phe Ala Tyr Glu Lys Met Ile Ile Lys Gly Leu Ile Lys	65	70	75	80
Ile Leu Ile Phe Arg Ala Tyr Ile Asn Asp Ile Tyr Phe Thr Pro Phe	85	90	95	
Gly Trp Leu Thr Gly Val Asp Asp Asp Pro Glu Thr His Val Val Ile				

gaa aaa tat gat aaa tct aca acc gcc ggc aaa gtg tct tgt att cct.	192
Glu Lys Tyr Asp Lys Ser Thr Thr Ala Gly Lys Val Ser Cys Ile Pro	
50 55 60	
atc ggt atg atg ttg gaa cta gta gag tcg ggg cac ctg agc aga ccc	240
Ile Gly Met Met Leu Glu Leu Val Glu Ser Gly His Leu Ser Arg Pro	
65 70 75 80	
aat agt agc gac gaa ctc gat caa aag aaa gag tta acc gac gag tta	288
Asn Ser Ser Asp Glu Leu Asp Gln Lys Lys Glu Leu Thr Asp Glu Leu	
85 90 95	
aag acg cgt tac cat tct ata tat gat gtc ttt gag tta cct act agt	336
Lys Thr Arg Tyr His Ser Ile Tyr Asp Val Phe Glu Leu Pro Thr Ser	
100 105 110	
ata ccg tta gcg tat ttc ttt aaa cct cga cta cgg gaa aaa gta tct	384
Ile Pro Leu Ala Tyr Phe Phe Lys Pro Arg Leu Arg Glu Lys Val Ser	
115 120 125	
aag gcg ata gac ttc tca caa atg gat ttg aaa atc gat gat tta tca	432
Lys Ala Ile Asp Phe Ser Gln Met Asp Leu Lys Ile Asp Asp Leu Ser	
130 135 140	
cgt aaa gga ata cat act ggt gaa aat cca aag gtc gtc aag atg aaa	480
Arg Lys Gly Ile His Thr Gly Glu Asn Pro Lys Val Val Lys Met Lys	
145 150 155 160	
ata gag cct gag aga gga gcc tgg atg agc aat cga agt att aag aac	528
Ile Glu Pro Glu Arg Gly Ala Trp Met Ser Asn Arg Ser Ile Lys Asn	
165 170 175	
tta gtc tct cag ttt gct tat gga tcc gaa gtg gat tat ata gga caa	576
Leu Val Ser Gln Phe Ala Tyr Gly Ser Glu Val Asp Tyr Ile Gly Gln	
180 185 190	
ttt gac atg aga ttc tta aac tcc tta gcg att cat gaa aaa ttt gac	624
Phe Asp Met Arg Phe Leu Asn Ser Leu Ala Ile His Glu Lys Phe Asp	
195 200 205	
gcg ttt atg aat aaa cat atc tta tgc tat ata ctt aaa gac aaa att	672
Ala Phe Met Asn Lys His Ile Leu Ser Tyr Ile Leu Lys Asp Lys Ile	
210 215 220	
aaa agt tct acc tct aga ttt gta atg ttt gga ttt tgt tat ttg tct	720
Lys Ser Ser Thr Ser Arg Phe Val Met Phe Gly Phe Cys Tyr Leu Ser	
225 230 235 240	
cat tgg aaa tgt gta att tat gat aaa aaa caa tgt tta gta tcc ttt	768
His Trp Lys Cys Val Ile Tyr Asp Lys Lys Gln Cys Leu Val Ser Phe	
245 250 255	
tat gac tcc gga ggc aat att cca act gaa ttc cac cac tat aat aat	816
Tyr Asp Ser Gly Gly Asn Ile Pro Thr Glu Phe His His Tyr Asn Asn	
260 265 270	
ttt tat ttc tat tcc ttc tcc gat ggt ttt aac acg aat cac aga cat	864
Phe Tyr Phe Tyr Ser Phe Ser Asp Gly Phe Asn Thr Asn His Arg His	
275 280 285	

tct gta ttg gat aat aca aat tgt gac atc gat gtt tta ttc aga ttt	912
Ser Val Leu Asp Asn Thr Asn Cys Asp Ile Asp Val Leu Phe Arg Phe	
290 295 300	
ttc gaa tgt aca ttt gga gcg aaa ata ggc tgt att aat gta gaa gtt	960
Phe Glu Cys Thr Phe Gly Ala Lys Ile Gly Cys Ile Asn Val Glu Val	
305 310 315 320	
aat cag ctg ttg gaa tct gaa tgt gga atg ttt att agt ttg ttt atg	1008
Asn Gln Leu Leu Glu Ser Glu Cys Gly Met Phe Ile Ser Leu Phe Met	
325 330 335	
ata ttg tgt act agg aca cca cct aag agt ttc aaa tct ctg aaa aag	1056
Ile Leu Cys Thr Arg Thr Pro Pro Lys Ser Phe Lys Ser Leu Lys Lys	
340 345 350	
gtt tat aca ttc ttt aaa ttt tta gcg gat aag aaa atg aca tta ttt	1104
Val Tyr Thr Phe Phe Lys Phe Leu Ala Asp Lys Lys Met Thr Leu Phe	
355 360 365	
aag agc att cta ttt aac ctg cac gat cta tca ctg gat ata acg gaa	1152
Lys Ser Ile Leu Phe Asn Leu His Asp Leu Ser Leu Asp Ile Thr Glu	
370 375 380	
acg gat aac gca gga tta aaa gaa tat aaa cgt atg gaa aag tgg acc	1200
Thr Asp Asn Ala Gly Leu Lys Glu Tyr Lys Arg Met Glu Lys Trp Thr	
385 390 395 400	
aaa aag tca att aat gtg ata tgt gat aaa tta act aca aaa tta aat	1248
Lys Lys Ser Ile Asn Val Ile Cys Asp Lys Leu Thr Thr Lys Leu Asn	
405 410 415	
aga ata gta aac gac gat gaa	1269
Arg Ile Val Asn Asp Asp Glu	
420	

<210> 170
 <211> 423
 <212> PRT
 <213> vaccinia virus

<400> 170

Met Glu Arg Tyr Thr Asp Leu Val Ile Ser Lys Ile Pro Glu Leu Gly	
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Phe Thr Asn Leu Leu Cys His Ile Tyr Ser Leu Ala Gly Leu Cys Ser	
20 25 30	
Asn Ile Asp Val Ser Lys Phe Leu Thr Asn Cys Asn Gly Tyr Val Val	
35 40 45	
Glu Lys Tyr Asp Lys Ser Thr Thr Ala Gly Lys Val Ser Cys Ile Pro	
50 55 60	
Ile Gly Met Met Leu Glu Leu Val Glu Ser Gly His Leu Ser Arg Pro	
65 70 75 80	
Asn Ser Ser Asp Glu Leu Asp Gln Lys Lys Glu Leu Thr Asp Glu Leu	
85 90 95	
Lys Thr Arg Tyr His Ser Ile Tyr Asp Val Phe Glu Leu Pro Thr Ser	
100 105 110	
Ile Pro Leu Ala Tyr Phe Phe Lys Pro Arg Leu Arg Glu Lys Val Ser	

acg gaa cgt gat agt ttc tca ttg gcc gtg ttt cca gtt ata aaa cat	144
Thr Glu Arg Asp Ser Phe Ser Leu Ala Val Phe Pro Val Ile Lys His	
35 40 45	
aga tgg cat aac gca cac gtt gta aaa cat aaa gga ata tac aaa gtt	192
Arg Trp His Asn Ala His Val Val Lys His Lys Gly Ile Tyr Lys Val	
50 55 60	
agt aca gaa gca cgt gga aaa aaa gta tct cct cca tca cta gga aaa	240
Ser Thr Glu Ala Arg Gly Lys Lys Val Ser Pro Pro Ser Leu Gly Lys	
65 70 75 80	
ccc gca cac ata aac cta acc acg aaa caa tat ata tac agt gaa cac	288
Pro Ala His Ile Asn Leu Thr Thr Lys Gln Tyr Ile Tyr Ser Glu His	
85 90 95	
aca ata agc ttt gaa tgt tat agt ttt cta aaa tgt ata aca aat aca	336
Thr Ile Ser Phe Glu Cys Tyr Ser Phe Leu Lys Cys Ile Thr Asn Thr	
100 105 110	
gaa atc aat tcg ttc gat gag tat ata tta aga gga cta tta gaa gct	384
Glu Ile Asn Ser Phe Asp Glu Tyr Ile Leu Arg Gly Leu Leu Glu Ala	
115 120 125	
ggt aat agt tta cag ata ttt tcc aat tcc gta ggt aaa cga aca gat	432
Gly Asn Ser Leu Gln Ile Phe Ser Asn Ser Val Gly Lys Arg Thr Asp	
130 135 140	
act ata ggt gta cta ggg aat aag tat cca ttt agc aaa att cca ttg	480
Thr Ile Gly Val Leu Gly Asn Lys Tyr Pro Phe Ser Lys Ile Pro Leu	
145 150 155 160	
gcc tca tta act cct aaa gca caa cga gag ata ttt tta gcg tgg att	528
Ala Ser Leu Thr Pro Lys Ala Gln Arg Glu Ile Phe Leu Ala Trp Ile	
165 170 175	
tct cat aga cct gta gtt tta act gga gga act gga gtg ggt aag acg	576
Ser His Arg Pro Val Val Leu Thr Gly Gly Thr Gly Val Gly Lys Thr	
180 185 190	
tca cag gta ccc aag tta ttg ctt tgg ttt aat tat tta ttt ggt gga	624
Ser Gln Val Pro Lys Leu Leu Trp Phe Asn Tyr Leu Phe Gly Gly	
195 200 205	
ttc tct act cta gat aaa atc act gac ttt cac gaa aga cca gtc att	672
Phe Ser Thr Leu Asp Lys Ile Thr Asp Phe His Glu Arg Pro Val Ile	
210 215 220	
cta tct ctt cct agg ata gct tta gtt aga ttg cat agc aat acc att	720
Leu Ser Leu Pro Arg Ile Ala Leu Val Arg Leu His Ser Asn Thr Ile	
225 230 235 240	
tta aaa tca ttg gga ttt aag gta cta gat gga tct cct att tct tta	768
Leu Lys Ser Leu Gly Phe Lys Val Leu Asp Gly Ser Pro Ile Ser Leu	
245 250 255	
cgg tac gga tct ata ccg gaa gaa tta ata aac aaa caa cca aaa aaa	816
Arg Tyr Gly Ser Ile Pro Glu Glu Leu Ile Asn Lys Gln Pro Lys Lys	
260 265 270	

tat gga att gta ttt tct acc cat aag tta tct cta aca aaa cta ttt	864
Tyr Gly Ile Val Phe Ser Thr His Lys Leu Ser Leu Thr Lys Leu Phe	
275 280 285	
agt tat ggc act ctt att ata gac gaa gtt cat gag cat gat caa ata	912
Ser Tyr Gly Thr Leu Ile Ile Asp Glu Val His Glu His Asp Gln Ile	
290 295 300	
gga gat att att ata gca gta gcg aga aag cat cat acg aaa ata gat	960
Gly Asp Ile Ile Ile Ala Val Ala Arg Lys His His Thr Lys Ile Asp	
305 310 315 320	
tct atg ttt tta atg act gcc acg tta gag gat gac agg gaa cgg cta	1008
Ser Met Phe Leu Met Thr Ala Thr Leu Glu Asp Asp Arg Glu Arg Leu	
325 330 335	
aaa gta ttt tta cct aat ccc gca ttt ata cat att cct gga gat aca	1056
Lys Val Phe Leu Pro Asn Pro Ala Phe Ile His Ile Pro Gly Asp Thr	
340 345 350	
ctg ttt aaa att agc gag gta ttt att cat aat aag ata aat cca tct	1104
Leu Phe Lys Ile Ser Glu Val Phe Ile His Asn Lys Ile Asn Pro Ser	
355 360 365	
tcc aga atg gca tac ata gaa gaa gaa aag aga aat tta gtt act gct	1152
Ser Arg Met Ala Tyr Ile Glu Glu Glu Lys Arg Asn Leu Val Thr Ala	
370 375 380	
ata cag atg tat act cct cct gat gga tca tcc ggt ata gtc ttt gtg	1200
Ile Gln Met Tyr Thr Pro Pro Asp Gly Ser Ser Gly Ile Val Phe Val	
385 390 395 400	
gca tcc gtt gca cag tgt cac gaa tat aaa tca tat tta gaa aaa aga	1248
Ala Ser Val Ala Gln Cys His Glu Tyr Lys Ser Tyr Leu Glu Lys Arg	
405 410 415	
tta ccg tat gat atg tat att att cat ggt aag gtt tta gat ata gac	1296
Leu Pro Tyr Asp Met Tyr Ile Ile His Gly Lys Val Leu Asp Ile Asp	
420 425 430	
gaa ata tta gaa aaa gtg tat tca tca cct aat gta tcg ata att att	1344
Glu Ile Leu Glu Lys Val Tyr Ser Ser Pro Asn Val Ser Ile Ile Ile	
435 440 445	
tct act cct tat ttg gaa tcc agc gtt act ata cac aat gtt aca cac	1392
Ser Thr Pro Tyr Leu Glu Ser Ser Val Thr Ile His Asn Val Thr His	
450 455 460	
att tat gat atg ggt aga gtt ttt gtc ccc gct cct ttt gga gga tcg	1440
Ile Tyr Asp Met Gly Arg Val Phe Val Pro Ala Pro Phe Gly Gly Ser	
465 470 475 480	
caa caa ttt att tct aaa tct atg aga gat caa cga aaa gga aga gta	1488
Gln Gln Phe Ile Ser Lys Ser Met Arg Asp Gln Arg Lys Gly Arg Val	
485 490 495	
gga aga gtt aat cct ggt aca tac gtc tat ttc tat gat ctg tct tat	1536
Gly Arg Val Asn Pro Gly Thr Tyr Val Tyr Phe Tyr Asp Leu Ser Tyr	

500					505					510						
atg	aag	tct	ata	cag	cga	ata	gat	tca	gaa	ttt	cta	cat	aat	tat	ata	1584
Met	Lys	Ser	Ile	Gln	Arg	Ile	Asp	Ser	Glu	Phe	Leu	His	Asn	Tyr	Ile	
		515					520					525				
ttg	tac	gct	aat	aag	ttt	aat	cta	aca	ctc	ccc	gaa	gat	ttg	ttt	ata	1632
Leu	Tyr	Ala	Asn	Lys	Phe	Asn	Leu	Thr	Leu	Pro	Glu	Asp	Leu	Phe	Ile	
	530					535					540					
atc	cct	aca	aat	ttg	gat	att	cta	tgg	cgt	aca	aag	gaa	tat	ata	gac	1680
Ile	Pro	Thr	Asn	Leu	Asp	Ile	Leu	Trp	Arg	Thr	Lys	Glu	Tyr	Ile	Asp	
545					550				555						560	
tcg	ttc	gat	att	agt	aca	gaa	aca	tgg	aat	aaa	tta	tta	tcc	aat	tat	1728
Ser	Phe	Asp	Ile	Ser	Thr	Glu	Thr	Trp	Asn	Lys	Leu	Leu	Ser	Asn	Tyr	
				565					570					575		
tat	atg	aag	atg	ata	gag	tat	gct	aaa	ctt	tat	gta	cta	agt	cct	att	1776
Tyr	Met	Lys	Met	Ile	Glu	Tyr	Ala	Lys	Leu	Tyr	Val	Leu	Ser	Pro	Ile	
			580					585					590			
ctc	gct	gag	gag	ttg	gat	aat	ttt	gag	agg	acg	gga	gaa	tta	act	agt	1824
Leu	Ala	Glu	Glu	Leu	Asp	Asn	Phe	Glu	Arg	Thr	Gly	Glu	Leu	Thr	Ser	
		595					600					605				
att	gta	caa	gaa	gcc	att	tta	tct	cta	aat	tta	cga	att	aag	att	tta	1872
Ile	Val	Gln	Glu	Ala	Ile	Leu	Ser	Leu	Asn	Leu	Arg	Ile	Lys	Ile	Leu	
	610					615					620					
aat	ttt	aaa	cat	aaa	gat	gat	gat	acg	tat	ata	cac	ttt	tgt	aaa	ata	1920
Asn	Phe	Lys	His	Lys	Asp	Asp	Asp	Thr	Tyr	Ile	His	Phe	Cys	Lys	Ile	
625					630				635						640	
tta	ttc	ggt	gtc	tat	aac	gga	aca	aac	gct	act	ata	tat	tat	cat	aga	1968
Leu	Phe	Gly	Val	Tyr	Asn	Gly	Thr	Asn	Ala	Thr	Ile	Tyr	Tyr	His	Arg	
				645					650					655		
cct	cta	acg	gga	tat	atg	aat	atg	att	tca	gat	act	ata	ttt	gtt	cct	2016
Pro	Leu	Thr	Gly	Tyr	Met	Asn	Met	Ile	Ser	Asp	Thr	Ile	Phe	Val	Pro	
			660					665					670			
gta	gat	aat	aac	taa												2031
Val	Asp	Asn	Asn	*												
			675													

<210> 172
 <211> 676
 <212> PRT
 <213> vaccinia virus

<400> 172
 Met Glu Lys Asn Leu Pro Asp Ile Phe Phe Phe Pro Asn Cys Val Asn
 1 5 10 15
 Val Phe Ser Tyr Lys Tyr Ser Gln Asp Glu Phe Ser Asn Met Ser Lys
 20 25 30
 Thr Glu Arg Asp Ser Phe Ser Leu Ala Val Phe Pro Val Ile Lys His
 35 40 45

Arg	Trp	His	Asn	Ala	His	Val	Val	Lys	His	Lys	Gly	Ile	Tyr	Lys	Val
50						55					60				
Ser	Thr	Glu	Ala	Arg	Gly	Lys	Lys	Val	Ser	Pro	Pro	Ser	Leu	Gly	Lys
65					70					75					80
Pro	Ala	His	Ile	Asn	Leu	Thr	Thr	Lys	Gln	Tyr	Ile	Tyr	Ser	Glu	His
				85					90					95	
Thr	Ile	Ser	Phe	Glu	Cys	Tyr	Ser	Phe	Leu	Lys	Cys	Ile	Thr	Asn	Thr
			100					105					110		
Glu	Ile	Asn	Ser	Phe	Asp	Glu	Tyr	Ile	Leu	Arg	Gly	Leu	Leu	Glu	Ala
		115					120					125			
Gly	Asn	Ser	Leu	Gln	Ile	Phe	Ser	Asn	Ser	Val	Gly	Lys	Arg	Thr	Asp
	130					135					140				
Thr	Ile	Gly	Val	Leu	Gly	Asn	Lys	Tyr	Pro	Phe	Ser	Lys	Ile	Pro	Leu
145					150					155					160
Ala	Ser	Leu	Thr	Pro	Lys	Ala	Gln	Arg	Glu	Ile	Phe	Leu	Ala	Trp	Ile
				165					170					175	
Ser	His	Arg	Pro	Val	Val	Leu	Thr	Gly	Gly	Thr	Gly	Val	Gly	Lys	Thr
			180					185					190		
Ser	Gln	Val	Pro	Lys	Leu	Leu	Leu	Trp	Phe	Asn	Tyr	Leu	Phe	Gly	Gly
	195						200					205			
Phe	Ser	Thr	Leu	Asp	Lys	Ile	Thr	Asp	Phe	His	Glu	Arg	Pro	Val	Ile
	210					215					220				
Leu	Ser	Leu	Pro	Arg	Ile	Ala	Leu	Val	Arg	Leu	His	Ser	Asn	Thr	Ile
225					230					235					240
Leu	Lys	Ser	Leu	Gly	Phe	Lys	Val	Leu	Asp	Gly	Ser	Pro	Ile	Ser	Leu
			245						250					255	
Arg	Tyr	Gly	Ser	Ile	Pro	Glu	Glu	Leu	Ile	Asn	Lys	Gln	Pro	Lys	Lys
			260					265					270		
Tyr	Gly	Ile	Val	Phe	Ser	Thr	His	Lys	Leu	Ser	Leu	Thr	Lys	Leu	Phe
	275						280					285			
Ser	Tyr	Gly	Thr	Leu	Ile	Ile	Asp	Glu	Val	His	Glu	His	Asp	Gln	Ile
	290					295					300				
Gly	Asp	Ile	Ile	Ile	Ala	Val	Ala	Arg	Lys	His	His	Thr	Lys	Ile	Asp
305					310					315					320
Ser	Met	Phe	Leu	Met	Thr	Ala	Thr	Leu	Glu	Asp	Asp	Arg	Glu	Arg	Leu
			325						330					335	
Lys	Val	Phe	Leu	Pro	Asn	Pro	Ala	Phe	Ile	His	Ile	Pro	Gly	Asp	Thr
			340					345					350		
Leu	Phe	Lys	Ile	Ser	Glu	Val	Phe	Ile	His	Asn	Lys	Ile	Asn	Pro	Ser
	355						360					365			
Ser	Arg	Met	Ala	Tyr	Ile	Glu	Glu	Glu	Lys	Arg	Asn	Leu	Val	Thr	Ala
	370					375					380				
Ile	Gln	Met	Tyr	Thr	Pro	Pro	Asp	Gly	Ser	Ser	Gly	Ile	Val	Phe	Val
385					390					395					400
Ala	Ser	Val	Ala	Gln	Cys	His	Glu	Tyr	Lys	Ser	Tyr	Leu	Glu	Lys	Arg
			405						410					415	
Leu	Pro	Tyr	Asp	Met	Tyr	Ile	Ile	His	Gly	Lys	Val	Leu	Asp	Ile	Asp
			420					425					430		
Glu	Ile	Leu	Glu	Lys	Val	Tyr	Ser	Ser	Pro	Asn	Val	Ser	Ile	Ile	Ile
	435						440					445			
Ser	Thr	Pro	Tyr	Leu	Glu	Ser	Ser	Val	Thr	Ile	His	Asn	Val	Thr	His
	450					455					460				
Ile	Tyr	Asp	Met	Gly	Arg	Val	Phe	Val	Pro	Ala	Pro	Phe	Gly	Gly	Ser
465					470					475					480
Gln	Gln	Phe	Ile	Ser	Lys	Ser	Met	Arg	Asp	Gln	Arg	Lys	Gly	Arg	Val
			485						490					495	
Gly	Arg	Val	Asn	Pro	Gly	Thr	Tyr	Val	Tyr	Phe	Tyr	Asp	Leu	Ser	Tyr
			500					505					510		
Met	Lys	Ser	Ile	Gln	Arg	Ile	Asp	Ser	Glu	Phe	Leu	His	Asn	Tyr	Ile

100	105	110	
aac gaa tac tat ttt aga aat gaa gta ttc cat tgt atg gat ata cta Asn Glu Tyr Tyr Phe Arg Asn Glu Val Phe His Cys Met Asp Ile Leu 115 120 125			384
acg ttt ctt agc gga ggc gat tta tat aac ggt ggg aga ata gac atg Thr Phe Leu Ser Gly Gly Asp Leu Tyr Asn Gly Gly Arg Ile Asp Met 130 135 140			432
ata gat aat ctt aat ata gtt cgt gat atg ctg gta aat aga atg caa Ile Asp Asn Leu Asn Ile Val Arg Asp Met Leu Val Asn Arg Met Gln 145 150 155 160			480
agg ata tcg gga tcg aat atc gta att ttt gtt aag aga tta gga cct Arg Ile Ser Gly Ser Asn Ile Val Ile Phe Val Lys Arg Leu Gly Pro 165 170 175			528
gga aca ttg gat ttc ttc aaa cag aca ttt ggg tct tta cca gca tgt Gly Thr Leu Asp Phe Phe Lys Gln Thr Phe Gly Ser Leu Pro Ala Cys 180 185 190			576
ccg gag att att cct tca tct att cca gta agt aca aac ggt aaa ata Pro Glu Ile Ile Pro Ser Ser Ile Pro Val Ser Thr Asn Gly Lys Ile 195 200 205			624
gtt atg act ccg tct cca ttt tat aca gtt atg gta aag att aat cca Val Met Thr Pro Ser Pro Phe Tyr Thr Val Met Val Lys Ile Asn Pro 210 215 220			672
aca tta gat aat att tta ggg att ctg tat ttg tac gaa act tac cac Thr Leu Asp Asn Ile Leu Gly Ile Leu Tyr Leu Tyr Glu Thr Tyr His 225 230 235 240			720
tta ata gac tat gag act atc ggc aac cag tta tat tta acg gta tcc Leu Ile Asp Tyr Glu Thr Ile Gly Asn Gln Leu Tyr Leu Thr Val Ser 245 250 255			768
ttt atc gat gaa act gaa tac gag agc ttt ctt cgt ggc gag gct ata Phe Ile Asp Glu Thr Glu Tyr Glu Ser Phe Leu Arg Gly Glu Ala Ile 260 265 270			816
tta caa att agt caa tgt caa cgt att aat atg aat tat agc gac gat Leu Gln Ile Ser Gln Cys Gln Arg Ile Asn Met Asn Tyr Ser Asp Asp 275 280 285			864
tat atg atg aac atc tat tta aat ttt cct tgg cta tcg cat gat tta Tyr Met Met Asn Ile Tyr Leu Asn Phe Pro Trp Leu Ser His Asp Leu 290 295 300			912
tat gat tac att aca cgt att aat gac gat agc aag tcg ata cta ata Tyr Asp Tyr Ile Thr Arg Ile Asn Asp Asp Ser Lys Ser Ile Leu Ile 305 310 315 320			960
tcc ttg aca aat gaa ata tat gca tct ata att aat aga gat atc ata Ser Leu Thr Asn Glu Ile Tyr Ala Ser Ile Ile Asn Arg Asp Ile Ile 325 330 335			1008
gtt att tac cca aac ttt agt aag gcc atg tgt aac act aga gat acc			1056

Val	Ile	Tyr	Pro	Asn	Phe	Ser	Lys	Ala	Met	Cys	Asn	Thr	Arg	Asp	Thr		
			340					345					350				
caa	caa	cat	ccg	ata	gta	gtt	ctt	gac	gca	acc	aat	gat	gga	ctg	att	1104	
Gln	Gln	His	Pro	Ile	Val	Val	Leu	Asp	Ala	Thr	Asn	Asp	Gly	Leu	Ile		
		355					360					365					
aag	aaa	cct	tat	aga	agt	ata	ccc	cta	atg	aag	cgt	cta	aca	tct	aat	1152	
Lys	Lys	Pro	Tyr	Arg	Ser	Ile	Pro	Leu	Met	Lys	Arg	Leu	Thr	Ser	Asn		
	370					375					380						
gaa	ata	ttt	ata	cga	tac	gga	gac	gcg	tct	ctc	atg	gac	atg	ata	act	1200	
Glu	Ile	Phe	Ile	Arg	Tyr	Gly	Asp	Ala	Ser	Leu	Met	Asp	Met	Ile	Thr		
385					390					395					400		
tta	tca	ttg	tct	aaa	caa	gat	ata	tca	tta	aaa	aga	aat	gcc	gaa	gga	1248	
Leu	Ser	Leu	Ser	Lys	Gln	Asp	Ile	Ser	Leu	Lys	Arg	Asn	Ala	Glu	Gly		
				405					410					415			
ata	cgt	gta	aaa	cat	agt	ttt	tca	gct	gat	gat	ata	cag	gca	att	atg	1296	
Ile	Arg	Val	Lys	His	Ser	Phe	Ser	Ala	Asp	Asp	Ile	Gln	Ala	Ile	Met		
			420					425					430				
gaa	tct	gat	tcg	ttt	tta	aag	tat	agt	aga	tca	aaa	cca	gct	gcg	atg	1344	
Glu	Ser	Asp	Ser	Phe	Leu	Lys	Tyr	Ser	Arg	Ser	Lys	Pro	Ala	Ala	Met		
	435					440						445					
tat	caa	tat	ata	ttt	cta	tca	ttt	ttt	gct	agt	ggg	aat	tcc	ata	gat	1392	
Tyr	Gln	Tyr	Ile	Phe	Leu	Ser	Phe	Phe	Ala	Ser	Gly	Asn	Ser	Ile	Asp		
	450					455					460						
gac	ata	ttg	gca	aat	aga	gat	tct	acc	tta	gaa	ttt	tct	aaa	aga	act	1440	
Asp	Ile	Leu	Ala	Asn	Arg	Asp	Ser	Thr	Leu	Glu	Phe	Ser	Lys	Arg	Thr		
465					470					475					480		
aaa	agt	aaa	att	ttg	ttt	ggg	agg	aat	acc	agg	tac	gac	gtc	act	gca	1488	
Lys	Ser	Lys	Ile	Leu	Phe	Gly	Arg	Asn	Thr	Arg	Tyr	Asp	Val	Thr	Ala		
				485					490					495			
aaa	tct	agt	ttt	gta	tgt	ggg	ata	gta	cga	ggg	aaa	tca	ttg	gat	aaa	1536	
Lys	Ser	Ser	Phe	Val	Cys	Gly	Ile	Val	Arg	Gly	Lys	Ser	Leu	Asp	Lys		
			500					505					510				
acg	tct	ctg	gtt	gaa	atg	atg	tgg	gat	ctc	aag	aag	aaa	gga	tta	ata	1584	
Thr	Ser	Leu	Val	Glu	Met	Met	Trp	Asp	Leu	Lys	Lys	Lys	Gly	Leu	Ile		
		515					520					525					
tat	tct	atg	gaa	ttt	acc	aat	cta	ttg	agc	aag	aat	acc	ttt	tat	ctg	1632	
Tyr	Ser	Met	Glu	Phe	Thr	Asn	Leu	Leu	Ser	Lys	Asn	Thr	Phe	Tyr	Leu		
	530					535					540						
ttc	aca	ttt	act	atc	tac	act	gat	gaa	gta	tac	gat	tat	cta	aac	act	1680	
Phe	Thr	Phe	Thr	Ile	Tyr	Thr	Asp	Glu	Val	Tyr	Asp	Tyr	Leu	Asn	Thr		
545					550					555					560		
aat	aaa	ctt	ttt	tct	gca	aaa	tgt	tta	gtc	gtg	tct	aca	aaa	gga	gat	1728	
Asn	Lys	Leu	Phe	Ser	Ala	Lys	Cys	Leu	Val	Val	Ser	Thr	Lys	Gly	Asp		
				565					570					575			

gtg gaa aat ttt tca tct cta aaa aaa gat gtg gtc att aga gtt
 Val Glu Asn Phe Ser Ser Leu Lys Lys Asp Val Val Ile Arg Val
 580 585 590

1773

<210> 174
 <211> 591
 <212> PRT
 <213> vaccinia virus

<400> 174
 Met Ile Val Leu Pro Asn Lys Val Arg Ile Phe Ile Asn Asp Arg Met
 1 5 10 15
 Lys Lys Asp Ile Tyr Leu Gly Ile Ser Asn Phe Gly Phe Glu Asn Asp
 20 25 30
 Ile Asp Glu Ile Leu Gly Ile Ala His Leu Leu Glu His Leu Leu Ile
 35 40 45
 Ser Phe Asp Ser Thr Asn Phe Leu Ala Asn Ala Ser Thr Ser Arg Ser
 50 55 60
 Tyr Met Ser Phe Trp Cys Lys Ser Ile Asn Ser Ala Thr Glu Ser Asp
 65 70 75 80
 Ala Ile Arg Thr Leu Val Ser Trp Phe Phe Ser Asn Gly Lys Leu Lys
 85 90 95
 Asp Asn Phe Ser Leu Ser Ser Ile Arg Phe His Ile Lys Glu Leu Glu
 100 105 110
 Asn Glu Tyr Tyr Phe Arg Asn Glu Val Phe His Cys Met Asp Ile Leu
 115 120 125
 Thr Phe Leu Ser Gly Gly Asp Leu Tyr Asn Gly Gly Arg Ile Asp Met
 130 135 140
 Ile Asp Asn Leu Asn Ile Val Arg Asp Met Leu Val Asn Arg Met Gln
 145 150 155 160
 Arg Ile Ser Gly Ser Asn Ile Val Ile Phe Val Lys Arg Leu Gly Pro
 165 170 175
 Gly Thr Leu Asp Phe Phe Lys Gln Thr Phe Gly Ser Leu Pro Ala Cys
 180 185 190
 Pro Glu Ile Ile Pro Ser Ser Ile Pro Val Ser Thr Asn Gly Lys Ile
 195 200 205
 Val Met Thr Pro Ser Pro Phe Tyr Thr Val Met Val Lys Ile Asn Pro
 210 215 220
 Thr Leu Asp Asn Ile Leu Gly Ile Leu Tyr Leu Tyr Glu Thr Tyr His
 225 230 235 240
 Leu Ile Asp Tyr Glu Thr Ile Gly Asn Gln Leu Tyr Leu Thr Val Ser
 245 250 255
 Phe Ile Asp Glu Thr Glu Tyr Glu Ser Phe Leu Arg Gly Glu Ala Ile
 260 265 270
 Leu Gln Ile Ser Gln Cys Gln Arg Ile Asn Met Asn Tyr Ser Asp Asp
 275 280 285
 Tyr Met Met Asn Ile Tyr Leu Asn Phe Pro Trp Leu Ser His Asp Leu
 290 295 300
 Tyr Asp Tyr Ile Thr Arg Ile Asn Asp Asp Ser Lys Ser Ile Leu Ile
 305 310 315 320
 Ser Leu Thr Asn Glu Ile Tyr Ala Ser Ile Ile Asn Arg Asp Ile Ile
 325 330 335
 Val Ile Tyr Pro Asn Phe Ser Lys Ala Met Cys Asn Thr Arg Asp Thr
 340 345 350
 Gln Gln His Pro Ile Val Val Leu Asp Ala Thr Asn Asp Gly Leu Ile
 355 360 365
 Lys Lys Pro Tyr Arg Ser Ile Pro Leu Met Lys Arg Leu Thr Ser Asn

370		375		380	
Glu Ile Phe Ile Arg Tyr Gly Asp Ala Ser Leu Met Asp Met Ile Thr					
385		390		395	400
Leu Ser Leu Ser Lys Gln Asp Ile Ser Leu Lys Arg Asn Ala Glu Gly					
	405		410		415
Ile Arg Val Lys His Ser Phe Ser Ala Asp Asp Ile Gln Ala Ile Met					
	420		425		430
Glu Ser Asp Ser Phe Leu Lys Tyr Ser Arg Ser Lys Pro Ala Ala Met					
	435		440		445
Tyr Gln Tyr Ile Phe Leu Ser Phe Phe Ala Ser Gly Asn Ser Ile Asp					
	450		455		460
Asp Ile Leu Ala Asn Arg Asp Ser Thr Leu Glu Phe Ser Lys Arg Thr					
465		470		475	480
Lys Ser Lys Ile Leu Phe Gly Arg Asn Thr Arg Tyr Asp Val Thr Ala					
	485		490		495
Lys Ser Ser Phe Val Cys Gly Ile Val Arg Gly Lys Ser Leu Asp Lys					
	500		505		510
Thr Ser Leu Val Glu Met Met Trp Asp Leu Lys Lys Lys Gly Leu Ile					
	515		520		525
Tyr Ser Met Glu Phe Thr Asn Leu Leu Ser Lys Asn Thr Phe Tyr Leu					
	530		535		540
Phe Thr Phe Thr Ile Tyr Thr Asp Glu Val Tyr Asp Tyr Leu Asn Thr					
545		550		555	560
Asn Lys Leu Phe Ser Ala Lys Cys Leu Val Val Ser Thr Lys Gly Asp					
	565		570		575
Val Glu Asn Phe Ser Ser Leu Lys Lys Asp Val Val Ile Arg Val					
	580		585		590

<210> 175
 <211> 336
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(336)

<400> 175	
atg gca tct tta tta tat ctt att tta ttt ttg tta ttc gta tgt att	48
Met Ala Ser Leu Leu Tyr Leu Ile Leu Phe Leu Leu Phe Val Cys Ile	
1 5 10 15	
tct tat tat ttt aca tat tat ccg acc aat aaa ctt cag gca gct gta	96
Ser Tyr Tyr Phe Thr Tyr Tyr Pro Thr Asn Lys Leu Gln Ala Ala Val	
20 25 30	
atg gaa aca gat aga gaa aac gct att att aga cag cga aat gat gaa	144
Met Glu Thr Asp Arg Glu Asn Ala Ile Ile Arg Gln Arg Asn Asp Glu	
35 40 45	
ata ccg act aga aca tta gat aca gct ata ttt acc gat gca tca acc	192
Ile Pro Thr Arg Thr Leu Asp Thr Ala Ile Phe Thr Asp Ala Ser Thr	
50 55 60	
gtc gcg agt gcg caa ata cac cta tat tat aat tcc aat att ggt aaa	240
Val Ala Ser Ala Gln Ile His Leu Tyr Tyr Asn Ser Asn Ile Gly Lys	
65 70 75 80	

att ata atg tca ctt aat ggt aaa aaa cac acc ttt aat tta tac gat 288
 Ile Ile Met Ser Leu Asn Gly Lys Lys His Thr Phe Asn Leu Tyr Asp
 85 90 95

gat aac gac ata cga aca tta ctt cct att tta ctc ctt agt aaa tga 336
 Asp Asn Asp Ile Arg Thr Leu Leu Pro Ile Leu Leu Leu Ser Lys *
 100 105 110

<210> 176
 <211> 111
 <212> PRT
 <213> vaccinia virus

<400> 176
 Met Ala Ser Leu Leu Tyr Leu Ile Leu Phe Leu Leu Phe Val Cys Ile
 1 5 10 15
 Ser Tyr Tyr Phe Thr Tyr Tyr Pro Thr Asn Lys Leu Gln Ala Ala Val
 20 25 30
 Met Glu Thr Asp Arg Glu Asn Ala Ile Ile Arg Gln Arg Asn Asp Glu
 35 40 45
 Ile Pro Thr Arg Thr Leu Asp Thr Ala Ile Phe Thr Asp Ala Ser Thr
 50 55 60
 Val Ala Ser Ala Gln Ile His Leu Tyr Tyr Asn Ser Asn Ile Gly Lys
 65 70 75 80
 Ile Ile Met Ser Leu Asn Gly Lys Lys His Thr Phe Asn Leu Tyr Asp
 85 90 95
 Asp Asn Asp Ile Arg Thr Leu Leu Pro Ile Leu Leu Leu Ser Lys
 100 105 110

<210> 177
 <211> 663
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(663)

<400> 177
 atg cca ttt aga gat cta att ttg ttc aac ttg tcc aaa ttc cta ctt 48
 Met Pro Phe Arg Asp Leu Ile Leu Phe Asn Leu Ser Lys Phe Leu Leu
 1 5 10 15
 aca gaa gat gag gaa tcg ttg gag ata gtg tct tcc tta tgt aga gga 96
 Thr Glu Asp Glu Glu Ser Leu Glu Ile Val Ser Ser Leu Cys Arg Gly
 20 25 30
 ttt gaa ata tct tat gat gac ttg ata act tac ttt cca gat agg aaa 144
 Phe Glu Ile Ser Tyr Asp Asp Leu Ile Thr Tyr Phe Pro Asp Arg Lys
 35 40 45
 tac cat aaa tat att tat aaa gta ttt gaa cat gta gat tta tcg gag 192
 Tyr His Lys Tyr Ile Tyr Lys Val Phe Glu His Val Asp Leu Ser Glu
 50 55 60
 gaa tta agt atg gaa ttc cat gat aca act ctg aga gat tta gtc tat 240

Glu	Leu	Ser	Met	Glu	Phe	His	Asp	Thr	Thr	Leu	Arg	Asp	Leu	Val	Tyr	
65					70					75					80	
ctt	aga	ttg	tac	aag	tat	tcc	aag	tgt	ata	cgg	ccg	tgt	tat	aaa	tta	288
Leu	Arg	Leu	Tyr	Lys	Tyr	Ser	Lys	Cys	Ile	Arg	Pro	Cys	Tyr	Lys	Leu	
				85					90					95		
gga	gat	aat	cta	aaa	ggc	ata	gtt	gtt	ata	aag	gac	agg	aat	att	tat	336
Gly	Asp	Asn	Leu	Lys	Gly	Ile	Val	Val	Ile	Lys	Asp	Arg	Asn	Ile	Tyr	
			100					105					110			
att	agg	gaa	gca	aat	gat	gac	ttg	ata	gaa	tat	ctc	ctc	aag	gaa	tac	384
Ile	Arg	Glu	Ala	Asn	Asp	Asp	Leu	Ile	Glu	Tyr	Leu	Leu	Lys	Glu	Tyr	
		115					120					125				
act	cct	cag	att	tat	aca	tat	tct	aat	gag	cga	gtt	ccc	ata	gct	ggt	432
Thr	Pro	Gln	Ile	Tyr	Thr	Tyr	Ser	Asn	Glu	Arg	Val	Pro	Ile	Ala	Gly	
	130					135					140					
tca	aaa	tta	att	ctt	tgt	gga	ttt	tct	caa	gtt	aca	ttt	atg	gcg	tat	480
Ser	Lys	Leu	Ile	Leu	Cys	Gly	Phe	Ser	Gln	Val	Thr	Phe	Met	Ala	Tyr	
145					150				155						160	
aca	acg	tcg	cat	ata	aca	aca	aat	aaa	aag	gta	gat	gtt	ctc	gtt	tcc	528
Thr	Thr	Ser	His	Ile	Thr	Thr	Asn	Lys	Lys	Val	Asp	Val	Leu	Val	Ser	
				165					170					175		
aaa	aaa	tgt	ata	gat	gaa	cta	gtc	gat	cca	ata	aat	tat	caa	ata	ctt	576
Lys	Lys	Cys	Ile	Asp	Glu	Leu	Val	Asp	Pro	Ile	Asn	Tyr	Gln	Ile	Leu	
			180					185					190			
caa	aat	tta	ttt	gat	aaa	gga	agc	gga	aca	ata	aac	aaa	ata	ctc	agg	624
Gln	Asn	Leu	Phe	Asp	Lys	Gly	Ser	Gly	Thr	Ile	Asn	Lys	Ile	Leu	Arg	
		195					200					205				
aag	ata	ttt	tat	tcg	gta	aca	ggt	ggc	caa	act	cca	tag				663
Lys	Ile	Phe	Tyr	Ser	Val	Thr	Gly	Gly	Gln	Thr	Pro	*				
	210					215					220					

<210> 178
 <211> 220
 <212> PRT
 <213> vaccinia virus

<400> 178

Met	Pro	Phe	Arg	Asp	Leu	Ile	Leu	Phe	Asn	Leu	Ser	Lys	Phe	Leu	Leu	
1				5					10					15		
Thr	Glu	Asp	Glu	Glu	Ser	Leu	Glu	Ile	Val	Ser	Ser	Leu	Cys	Arg	Gly	
			20				25						30			
Phe	Glu	Ile	Ser	Tyr	Asp	Asp	Leu	Ile	Thr	Tyr	Phe	Pro	Asp	Arg	Lys	
		35				40					45					
Tyr	His	Lys	Tyr	Ile	Tyr	Lys	Val	Phe	Glu	His	Val	Asp	Leu	Ser	Glu	
	50				55					60						
Glu	Leu	Ser	Met	Glu	Phe	His	Asp	Thr	Thr	Leu	Arg	Asp	Leu	Val	Tyr	
65				70					75					80		
Leu	Arg	Leu	Tyr	Lys	Tyr	Ser	Lys	Cys	Ile	Arg	Pro	Cys	Tyr	Lys	Leu	
			85					90					95			
Gly	Asp	Asn	Leu	Lys	Gly	Ile	Val	Val	Ile	Lys	Asp	Arg	Asn	Ile	Tyr	

			100					105					110						
Ile	Arg	Glu	Ala	Asn	Asp	Asp	Leu	Ile	Glu	Tyr	Leu	Leu	Lys	Glu	Tyr				
			115					120					125						
Thr	Pro	Gln	Ile	Tyr	Thr	Tyr	Ser	Asn	Glu	Arg	Val	Pro	Ile	Ala	Gly				
			130					135					140						
Ser	Lys	Leu	Ile	Leu	Cys	Gly	Phe	Ser	Gln	Val	Thr	Phe	Met	Ala	Tyr				
145					150						155				160				
Thr	Thr	Ser	His	Ile	Thr	Thr	Asn	Lys	Lys	Val	Asp	Val	Leu	Val	Ser				
				165						170					175				
Lys	Lys	Cys	Ile	Asp	Glu	Leu	Val	Asp	Pro	Ile	Asn	Tyr	Gln	Ile	Leu				
			180						185				190						
Gln	Asn	Leu	Phe	Asp	Lys	Gly	Ser	Gly	Thr	Ile	Asn	Lys	Ile	Leu	Arg				
		195					200					205							
Lys	Ile	Phe	Tyr	Ser	Val	Thr	Gly	Gly	Gln	Thr	Pro								
	210						215				220								

<210> 179
 <211> 372
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(372)

<400> 179																
atg	aag	aac	gta	ttg	att	att	ttc	ggt	aaa	cgc	tat	tgt	agt	att	tgt	48
Met	Lys	Asn	Val	Leu	Ile	Ile	Phe	Gly	Lys	Pro	Tyr	Cys	Ser	Ile	Cys	
1				5					10					15		
gaa aat gtc agt gag tca gta gaa gaa tta aaa tcc gag tat gat ata																96
Glu	Asn	Val	Ser	Glu	Ser	Val	Glu	Glu	Leu	Lys	Ser	Glu	Tyr	Asp	Ile	
			20					25					30			
ctc cat gtt gat atc tta tca ttt ttt tta aag gat ggt gat tca agt																144
Leu	His	Val	Asp	Ile	Leu	Ser	Phe	Phe	Leu	Lys	Asp	Gly	Asp	Ser	Ser	
		35					40					45				
atg ctg ggt gac gta aag cgc gga acc cta ata gga aac ttt gca gcg																192
Met	Leu	Gly	Asp	Val	Lys	Arg	Gly	Thr	Leu	Ile	Gly	Asn	Phe	Ala	Ala	
	50					55					60					
cat cta tct aac tac atc gtt tcc att ttc aaa tac aat cca cag aca																240
His	Leu	Ser	Asn	Tyr	Ile	Val	Ser	Ile	Phe	Lys	Tyr	Asn	Pro	Gln	Thr	
	65				70					75				80		
aaa caa atg gca ttt gtg gac att aat aaa tcc ttg gat ttc acc aaa																288
Lys	Gln	Met	Ala	Phe	Val	Asp	Ile	Asn	Lys	Ser	Leu	Asp	Phe	Thr	Lys	
			85						90				95			
acc gat aaa tcg ctg gtg aat ttg gaa att cta aaa tcc gaa ata gaa																336
Thr	Asp	Lys	Ser	Leu	Val	Asn	Leu	Glu	Ile	Leu	Lys	Ser	Glu	Ile	Glu	
			100					105					110			
aaa gct acc tat gga gtt tgg cca cct gtt acc gaa																372
Lys	Ala	Thr	Tyr	Gly	Val	Trp	Pro	Pro	Val	Thr	Glu					
	115						120									

<210> 180
 <211> 124
 <212> PRT
 <213> vaccinia virus

<400> 180
 Met Lys Asn Val Leu Ile Ile Phe Gly Lys Pro Tyr Cys Ser Ile Cys
 1 5 10 15
 Glu Asn Val Ser Glu Ser Val Glu Glu Leu Lys Ser Glu Tyr Asp Ile
 20 25 30
 Leu His Val Asp Ile Leu Ser Phe Phe Leu Lys Asp Gly Asp Ser Ser
 35 40 45
 Met Leu Gly Asp Val Lys Arg Gly Thr Leu Ile Gly Asn Phe Ala Ala
 50 55 60
 His Leu Ser Asn Tyr Ile Val Ser Ile Phe Lys Tyr Asn Pro Gln Thr
 65 70 75 80
 Lys Gln Met Ala Phe Val Asp Ile Asn Lys Ser Leu Asp Phe Thr Lys
 85 90 95
 Thr Asp Lys Ser Leu Val Asn Leu Glu Ile Leu Lys Ser Glu Ile Glu
 100 105 110
 Lys Ala Thr Tyr Gly Val Trp Pro Pro Val Thr Glu
 115 120

<210> 181
 <211> 1305
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1305)

<400> 181
 atg ggt atc aaa aac tta aaa tcg tta ctg ctg gaa aat aaa tca ctg 48
 Met Gly Ile Lys Asn Leu Lys Ser Leu Leu Leu Glu Asn Lys Ser Leu
 1 5 10 15
 acg ata tta gat gat aat tta tac aaa gta tac aat gga ata ttt gtg 96
 Thr Ile Leu Asp Asp Asn Leu Tyr Lys Val Tyr Asn Gly Ile Phe Val
 20 25 30
 gat aca atg agt att tat ata gcc gtc gcc aat tgt gtc aga aac tta 144
 Asp Thr Met Ser Ile Tyr Ile Ala Val Ala Asn Cys Val Arg Asn Leu
 35 40 45
 gaa gag tta act acg gta ttc ata aaa tac gta aac gga tgg gta aaa 192
 Glu Glu Leu Thr Thr Val Phe Ile Lys Tyr Val Asn Gly Trp Val Lys
 50 55 60
 aag gga ggg cat gta acc ctt ttt atc gat aga gga agt ata aaa att 240
 Lys Gly Gly His Val Thr Leu Phe Ile Asp Arg Gly Ser Ile Lys Ile
 65 70 75 80
 aaa caa gac gtt aga gac aag aga cgt aaa tat tct aaa tta acc aag 288
 Lys Gln Asp Val Arg Asp Lys Arg Arg Lys Tyr Ser Lys Leu Thr Lys
 85 90 95
 gac aga aaa atg tta gaa tta gaa aag tgt aca tcc gaa ata caa aat 336

Asp	Arg	Lys	Met	Leu	Glu	Leu	Glu	Lys	Cys	Thr	Ser	Glu	Ile	Gln	Asn		
			100					105					110				
gtt	acc	gga	ttt	atg	gaa	gaa	gaa	ata	aag	gca	aaa	atg	caa	tta	aaa	384	
Val	Thr	Gly	Phe	Met	Glu	Glu	Glu	Ile	Lys	Ala	Lys	Met	Gln	Leu	Lys		
		115					120					125					
atc	gat	aaa	ctt	aca	ttt	caa	ata	tat	tta	tct	gat	tct	gat	aac	ata	432	
Ile	Asp	Lys	Leu	Thr	Phe	Gln	Ile	Tyr	Leu	Ser	Asp	Ser	Asp	Asn	Ile		
	130					135					140						
aaa	ata	tca	ttg	aat	gag	ata	cta	aca	cat	ttc	aac	aat	aat	gag	aat	480	
Lys	Ile	Ser	Leu	Asn	Glu	Ile	Leu	Thr	His	Phe	Asn	Asn	Asn	Glu	Asn		
145					150					155					160		
gtt	aca	tta	ttt	tat	tgt	gat	gaa	cga	gac	gca	gaa	ttc	gtt	atg	tgt	528	
Val	Thr	Leu	Phe	Tyr	Cys	Asp	Glu	Arg	Ala	Glu	Phe	Val	Met	Cys			
			165					170					175				
ctc	gag	gct	aaa	aca	cat	ttc	tct	acc	aca	gga	gaa	tgg	ccg	ttg	ata	576	
Leu	Glu	Ala	Lys	Thr	His	Phe	Ser	Thr	Thr	Gly	Glu	Trp	Pro	Leu	Ile		
			180					185					190				
ata	agt	acc	gat	cag	gat	act	atg	cta	ttt	gca	tct	gct	gat	aat	cat	624	
Ile	Ser	Thr	Asp	Gln	Asp	Thr	Met	Leu	Phe	Ala	Ser	Ala	Asp	Asn	His		
		195					200					205					
cct	aag	atg	ata	aaa	aac	tta	act	caa	ctg	ttt	aaa	tat	gtt	cca	tct	672	
Pro	Lys	Met	Ile	Lys	Asn	Leu	Thr	Gln	Leu	Phe	Lys	Tyr	Val	Pro	Ser		
	210					215					220						
gca	gag	gat	aac	tat	tta	gca	aaa	tta	acg	gcg	tta	gtg	aat	gga	tgt	720	
Ala	Glu	Asp	Asn	Tyr	Leu	Ala	Lys	Leu	Thr	Ala	Leu	Val	Asn	Gly	Cys		
225					230					235					240		
gat	ttc	ttt	cct	gga	ctc	tat	ggg	gca	tct	ata	aca	ccc	aac	aac	tta	768	
Asp	Phe	Phe	Pro	Gly	Leu	Tyr	Gly	Ala	Ser	Ile	Thr	Pro	Asn	Asn	Leu		
				245					250					255			
aac	aaa	ata	caa	ttg	ttt	agt	gat	ttt	aca	atc	gat	aat	ata	gtc	act	816	
Asn	Lys	Ile	Gln	Leu	Phe	Ser	Asp	Phe	Thr	Ile	Asp	Asn	Ile	Val	Thr		
			260					265					270				
agt	ttg	gca	att	aaa	aat	tat	tat	aga	aag	act	aac	tct	acc	gta	gac	864	
Ser	Leu	Ala	Ile	Lys	Asn	Tyr	Tyr	Arg	Lys	Thr	Asn	Ser	Thr	Val	Asp		
		275					280					285					
gtg	cgt	aat	att	gtt	acg	ttt	ata	aac	gat	tac	gct	aat	tta	gac	gat	912	
Val	Arg	Asn	Ile	Val	Thr	Phe	Ile	Asn	Asp	Tyr	Ala	Asn	Leu	Asp	Asp		
	290					295					300						
gtc	tac	tcg	tat	gtt	cct	cct	tgt	caa	tgc	act	gtt	caa	gaa	ttt	ata	960	
Val	Tyr	Ser	Tyr	Val	Pro	Pro	Cys	Gln	Cys	Thr	Val	Gln	Glu	Phe	Ile		
305					310					315					320		
ttt	tcc	gca	tta	gat	gaa	aaa	tgg	aac	aat	ttt	aaa	tca	tct	tat	tta	1008	
Phe	Ser	Ala	Leu	Asp	Glu	Lys	Trp	Asn	Asn	Phe	Lys	Ser	Ser	Tyr	Leu		
				325					330						335		

gag acc gtt ccg tta ccc tgt caa tta atg tac gcg tta gaa cca cgt	1056
Glu Thr Val Pro Leu Pro Cys Gln Leu Met Tyr Ala Leu Glu Pro Arg	
340 345 350	
aag gag att gat gtt tca gaa gtt aaa act tta tca tct tat ata gat	1104
Lys Glu Ile Asp Val Ser Glu Val Lys Thr Leu Ser Ser Tyr Ile Asp	
355 360 365	
ttc gaa aat act aaa tca gat atc gat gtt ata aaa tct ata tcc tcg	1152
Phe Glu Asn Thr Lys Ser Asp Ile Asp Val Ile Lys Ser Ile Ser Ser	
370 375 380	
att ttt gga tat tct aac gaa aac tgt aac act ata gtg ttc ggc atc	1200
Ile Phe Gly Tyr Ser Asn Glu Asn Cys Asn Thr Ile Val Phe Gly Ile	
385 390 395 400	
tat aag gat aat tta cta ctg agt ata aat agt tca ttt tac ttt aac	1248
Tyr Lys Asp Asn Leu Leu Leu Ser Ile Asn Ser Ser Phe Tyr Phe Asn	
405 410 415	
gat agt ctg tta ata acc aat act aaa agt gat aat ata ata aat ata	1296
Asp Ser Leu Leu Ile Thr Asn Thr Lys Ser Asp Asn Ile Ile Asn Ile	
420 425 430	
ggt tac tag	1305
Gly Tyr *	

<210> 182
 <211> 434
 <212> PRT
 <213> vaccinia virus

<400> 182

Met Gly Ile Lys Asn Leu Lys Ser Leu Leu Leu Glu Asn Lys Ser Leu	
1 5 10 15	
Thr Ile Leu Asp Asp Asn Leu Tyr Lys Val Tyr Asn Gly Ile Phe Val	
20 25 30	
Asp Thr Met Ser Ile Tyr Ile Ala Val Ala Asn Cys Val Arg Asn Leu	
35 40 45	
Glu Glu Leu Thr Thr Val Phe Ile Lys Tyr Val Asn Gly Trp Val Lys	
50 55 60	
Lys Gly Gly His Val Thr Leu Phe Ile Asp Arg Gly Ser Ile Lys Ile	
65 70 75 80	
Lys Gln Asp Val Arg Asp Lys Arg Arg Lys Tyr Ser Lys Leu Thr Lys	
85 90 95	
Asp Arg Lys Met Leu Glu Leu Glu Lys Cys Thr Ser Glu Ile Gln Asn	
100 105 110	
Val Thr Gly Phe Met Glu Glu Glu Ile Lys Ala Lys Met Gln Leu Lys	
115 120 125	
Ile Asp Lys Leu Thr Phe Gln Ile Tyr Leu Ser Asp Ser Asp Asn Ile	
130 135 140	
Lys Ile Ser Leu Asn Glu Ile Leu Thr His Phe Asn Asn Asn Glu Asn	
145 150 155 160	
Val Thr Leu Phe Tyr Cys Asp Glu Arg Asp Ala Glu Phe Val Met Cys	
165 170 175	
Leu Glu Ala Lys Thr His Phe Ser Thr Thr Gly Glu Trp Pro Leu Ile	
180 185 190	

Ile Ser Thr Asp Gln Asp Thr Met Leu Phe Ala Ser Ala Asp Asn His
 195 200 205
 Pro Lys Met Ile Lys Asn Leu Thr Gln Leu Phe Lys Tyr Val Pro Ser
 210 215 220
 Ala Glu Asp Asn Tyr Leu Ala Lys Leu Thr Ala Leu Val Asn Gly Cys
 225 230 235 240
 Asp Phe Phe Pro Gly Leu Tyr Gly Ala Ser Ile Thr Pro Asn Asn Leu
 245 250 255
 Asn Lys Ile Gln Leu Phe Ser Asp Phe Thr Ile Asp Asn Ile Val Thr
 260 265 270
 Ser Leu Ala Ile Lys Asn Tyr Tyr Arg Lys Thr Asn Ser Thr Val Asp
 275 280 285
 Val Arg Asn Ile Val Thr Phe Ile Asn Asp Tyr Ala Asn Leu Asp Asp
 290 295 300
 Val Tyr Ser Tyr Val Pro Pro Cys Gln Cys Thr Val Gln Glu Phe Ile
 305 310 315 320
 Phe Ser Ala Leu Asp Glu Lys Trp Asn Asn Phe Lys Ser Ser Tyr Leu
 325 330 335
 Glu Thr Val Pro Leu Pro Cys Gln Leu Met Tyr Ala Leu Glu Pro Arg
 340 345 350
 Lys Glu Ile Asp Val Ser Glu Val Lys Thr Leu Ser Ser Tyr Ile Asp
 355 360 365
 Phe Glu Asn Thr Lys Ser Asp Ile Asp Val Ile Lys Ser Ile Ser Ser
 370 375 380
 Ile Phe Gly Tyr Ser Asn Glu Asn Cys Asn Thr Ile Val Phe Gly Ile
 385 390 395 400
 Tyr Lys Asp Asn Leu Leu Leu Ser Ile Asn Ser Ser Phe Tyr Phe Asn
 405 410 415
 Asp Ser Leu Leu Ile Thr Asn Thr Lys Ser Asp Asn Ile Ile Asn Ile
 420 425 430
 Gly Tyr

<210> 183
 <211> 192
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(192)

<400> 183
 atg gtg ttc caa ctc gtg tgc tct aca tgc ggt aaa gat att tct cac 48
 Met Val Phe Gln Leu Val Cys Ser Thr Cys Gly Lys Asp Ile Ser His
 1 5 10 15
 gaa cga tat aaa ttg att ata cga aaa aaa tca tta aag gat gta ctc 96
 Glu Arg Tyr Lys Leu Ile Ile Arg Lys Lys Ser Leu Lys Asp Val Leu
 20 25 30
 gtc agt gta aag aac gaa tgt tgt agg tta aaa tta tct aca caa ata 144
 Val Ser Val Lys Asn Glu Cys Cys Arg Leu Lys Leu Ser Thr Gln Ile
 35 40 45
 gaa cct caa cgt aac tta aca gtg caa cct cta ttg gat ata aac taa 192
 Glu Pro Gln Arg Asn Leu Thr Val Gln Pro Leu Leu Asp Ile Asn *
 50 55 60

<210> 184
 <211> 63
 <212> PRT
 <213> vaccinia virus

<400> 184
 Met Val Phe Gln Leu Val Cys Ser Thr Cys Gly Lys Asp Ile Ser His
 1 5 10 15
 Glu Arg Tyr Lys Leu Ile Ile Arg Lys Lys Ser Leu Lys Asp Val Leu
 20 25 30
 Val Ser Val Lys Asn Glu Cys Cys Arg Leu Lys Leu Ser Thr Gln Ile
 35 40 45
 Glu Pro Gln Arg Asn Leu Thr Val Gln Pro Leu Leu Asp Ile Asn
 50 55 60

<210> 185
 <211> 498
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(498)

<400> 185
 atg gat ccg gtt aat ttt atc aag aca tat gcg cct aga ggt tct att 48
 Met Asp Pro Val Asn Phe Ile Lys Thr Tyr Ala Pro Arg Gly Ser Ile
 1 5 10 15
 att ttt att aat tat acc atg tca tta aca agt cat ttg aat cca tcg 96
 Ile Phe Ile Asn Tyr Thr Met Ser Leu Thr Ser His Leu Asn Pro Ser
 20 25 30
 ata gaa aaa cat gtg ggt att tat tat ggt acg tta tta tcg gaa cac 144
 Ile Glu Lys His Val Gly Ile Tyr Tyr Gly Thr Leu Leu Ser Glu His
 35 40 45
 ttg gta gtt gaa tct acc tat aga aaa gga gtt cga ata gtc cca ttg 192
 Leu Val Val Glu Ser Thr Tyr Arg Lys Gly Val Arg Ile Val Pro Leu
 50 55 60
 gat agt ttt ttt gaa gga tat ctt agt gca aaa gta tac atg tta gag 240
 Asp Ser Phe Phe Glu Gly Tyr Leu Ser Ala Lys Val Tyr Met Leu Glu
 65 70 75 80
 aat att caa gtt atg aaa ata gca gct aat acg tca tta act tta ttg 288
 Asn Ile Gln Val Met Lys Ile Ala Ala Asn Thr Ser Leu Thr Leu Leu
 85 90 95
 ggt att ccg tat gga ttt ggt cat aat aga atg tat tgt ttt aaa ttg 336
 Gly Ile Pro Tyr Gly Phe Gly His Asn Arg Met Tyr Cys Phe Lys Leu
 100 105 110
 gta gct gaa tgt tat aaa aat gcc ggt att gat aca tcg tct aaa cga 384
 Val Ala Glu Cys Tyr Lys Asn Ala Gly Ile Asp Thr Ser Ser Lys Arg

115					120					125						
ata	ttg	ggc	aaa	gat	att	ttt	ctg	agc	caa	aac	ttc	aca	gac	gat	aat	432
Ile	Leu	Gly	Lys	Asp	Ile	Phe	Leu	Ser	Gln	Asn	Phe	Thr	Asp	Asp	Asn	
	130					135					140					
aga	tgg	ata	aag	ata	tat	gat	tct	aat	aat	tta	aca	ttt	tgg	caa	att	480
Arg	Trp	Ile	Lys	Ile	Tyr	Asp	Ser	Asn	Asn	Leu	Thr	Phe	Trp	Gln	Ile	
	145					150					155				160	
gat	tac	ctt	aaa	ggg	tga											498
Asp	Tyr	Leu	Lys	Gly	*											
				165												

<210> 186
 <211> 165
 <212> PRT
 <213> vaccinia virus

<400> 186

Met	Asp	Pro	Val	Asn	Phe	Ile	Lys	Thr	Tyr	Ala	Pro	Arg	Gly	Ser	Ile
1				5					10					15	
Ile	Phe	Ile	Asn	Tyr	Thr	Met	Ser	Leu	Thr	Ser	His	Leu	Asn	Pro	Ser
			20					25					30		
Ile	Glu	Lys	His	Val	Gly	Ile	Tyr	Tyr	Gly	Thr	Leu	Leu	Ser	Glu	His
	35						40					45			
Leu	Val	Val	Glu	Ser	Thr	Tyr	Arg	Lys	Gly	Val	Arg	Ile	Val	Pro	Leu
	50					55				60					
Asp	Ser	Phe	Phe	Glu	Gly	Tyr	Leu	Ser	Ala	Lys	Val	Tyr	Met	Leu	Glu
65				70					75					80	
Asn	Ile	Gln	Val	Met	Lys	Ile	Ala	Ala	Asn	Thr	Ser	Leu	Thr	Leu	Leu
			85						90					95	
Gly	Ile	Pro	Tyr	Gly	Phe	Gly	His	Asn	Arg	Met	Tyr	Cys	Phe	Lys	Leu
		100						105					110		
Val	Ala	Glu	Cys	Tyr	Lys	Asn	Ala	Gly	Ile	Asp	Thr	Ser	Ser	Lys	Arg
	115						120					125			
Ile	Leu	Gly	Lys	Asp	Ile	Phe	Leu	Ser	Gln	Asn	Phe	Thr	Asp	Asp	Asn
	130					135					140				
Arg	Trp	Ile	Lys	Ile	Tyr	Asp	Ser	Asn	Asn	Leu	Thr	Phe	Trp	Gln	Ile
	145				150					155					160
Asp	Tyr	Leu	Lys	Gly											
				165											

<210> 187
 <211> 1113
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1113)

<400> 187

atg	gct	gca	gaa	cag	cgt	cgt	tct	aca	att	ttt	gac	ata	gtt	tca	aaa
1				5					10					15	
Met	Ala	Ala	Glu	Gln	Arg	Arg	Ser	Thr	Ile	Phe	Asp	Ile	Val	Ser	Lys

tgt ata gtg caa tct gta tta aga gat ata tct att aat tct gaa tac	96
Cys Ile Val Gln Ser Val Leu Arg Asp Ile Ser Ile Asn Ser Glu Tyr	
20 25 30	
ata gag tcc aaa gct aaa caa ttg tgc tat tgt ccg gca tgc aaa aag	144
Ile Glu Ser Lys Ala Lys Gln Leu Cys Tyr Cys Pro Ala Ser Lys Lys	
35 40 45	
gaa tca gtg att aat ggt att tac aat tgt tgc gag tca aat ata gaa	192
Glu Ser Val Ile Asn Gly Ile Tyr Asn Cys Cys Glu Ser Asn Ile Glu	
50 55 60	
ata atg gac aaa gag cag cta tta aaa ata ttg gac aat ctt cga tgt	240
Ile Met Asp Lys Glu Gln Leu Leu Lys Ile Leu Asp Asn Leu Arg Cys	
65 70 75 80	
cat tgc gct cat gta tgt aac gcc aca gat ttc tgg aga cta tat aat	288
His Ser Ala His Val Cys Asn Ala Thr Asp Phe Trp Arg Leu Tyr Asn	
85 90 95	
tgc tta aaa cgg ttt act cat act acc gca ttc ttt aat aca tgc aag	336
Ser Leu Lys Arg Phe Thr His Thr Thr Ala Phe Phe Asn Thr Cys Lys	
100 105 110	
ccc act att cta gcc acg cta aac act ttg ata acc ctg att tta tct	384
Pro Thr Ile Leu Ala Thr Leu Asn Thr Leu Ile Thr Leu Ile Leu Ser	
115 120 125	
aac aag tta ttg tat gcg gca gaa atg gta gag tat cta gag aac caa	432
Asn Lys Leu Leu Tyr Ala Ala Glu Met Val Glu Tyr Leu Glu Asn Gln	
130 135 140	
cta gat tca tca aat aaa tca atg tct caa gaa cta gca gaa tta ttg	480
Leu Asp Ser Ser Asn Lys Ser Met Ser Gln Glu Leu Ala Glu Leu Leu	
145 150 155 160	
gaa atg aaa tat gct ctc att aat ctg gta caa tat agg att ttg cca	528
Glu Met Lys Tyr Ala Leu Ile Asn Leu Val Gln Tyr Arg Ile Leu Pro	
165 170 175	
atg atc atc ggt gag cct att ata gta gct gga ttt tct ggt aaa gaa	576
Met Ile Ile Gly Glu Pro Ile Ile Val Ala Gly Phe Ser Gly Lys Glu	
180 185 190	
cca att tct gat tat tct gca gaa gtg gaa agg cta atg gaa cta cca	624
Pro Ile Ser Asp Tyr Ser Ala Glu Val Glu Arg Leu Met Glu Leu Pro	
195 200 205	
gtt aaa act gat ata gtg aat acc aca tat gac ttc tta gca aga aaa	672
Val Lys Thr Asp Ile Val Asn Thr Thr Tyr Asp Phe Leu Ala Arg Lys	
210 215 220	
ggt att gat act agc aac aat ata gca gaa tat ata gcc ggc ttg aaa	720
Gly Ile Asp Thr Ser Asn Asn Ile Ala Glu Tyr Ile Ala Gly Leu Lys	
225 230 235 240	
ata gaa gag att gaa aag gta gaa aaa tat tta cca gaa gtt ata tct	768
Ile Glu Glu Ile Glu Lys Val Glu Lys Tyr Leu Pro Glu Val Ile Ser	
245 250 255	

aca att gcc aat agt aat ata ata aaa aat aaa aaa tct atc ttt ccg	816
Thr Ile Ala Asn Ser Asn Ile Ile Lys Asn Lys Lys Ser Ile Phe Pro	
260 265 270	
gcc aat atc aac gat aaa cag atc atg gaa tgc tct aga atg tta gac	864
Ala Asn Ile Asn Asp Lys Gln Ile Met Glu Cys Ser Arg Met Leu Asp	
275 280 285	
acg agt gag aaa tac tct aaa gga tat aaa act gat gga gct gtg act	912
Thr Ser Glu Lys Tyr Ser Lys Gly Tyr Lys Thr Asp Gly Ala Val Thr	
290 295 300	
agt cca ttg acg gga aat aat aca att aca aca ttt ata cca att tct	960
Ser Pro Leu Thr Gly Asn Asn Thr Ile Thr Thr Phe Ile Pro Ile Ser	
305 310 315 320	
gcg tcc gat atg caa aag ttt acc att tta gaa tat ctt tac att atg	1008
Ala Ser Asp Met Gln Lys Phe Thr Ile Leu Glu Tyr Leu Tyr Ile Met	
325 330 335	
aga gtg atg gca aac aac gtt aag aaa aag aac gag gga aaa aac aac	1056
Arg Val Met Ala Asn Asn Val Lys Lys Lys Asn Glu Gly Lys Asn Asn	
340 345 350	
gga gga gta gtt atg cat att aac tca ccc ttt aag gta atc aat ttg	1104
Gly Gly Val Val Met His Ile Asn Ser Pro Phe Lys Val Ile Asn Leu	
355 360 365	
cca aaa tgt	1113
Pro Lys Cys	
370	

<210> 188
 <211> 371
 <212> PRT
 <213> vaccinia virus

<400> 188

Met Ala Ala Glu Gln Arg Arg Ser Thr Ile Phe Asp Ile Val Ser Lys	
1 5 10 15	
Cys Ile Val Gln Ser Val Leu Arg Asp Ile Ser Ile Asn Ser Glu Tyr	
20 25 30	
Ile Glu Ser Lys Ala Lys Gln Leu Cys Tyr Cys Pro Ala Ser Lys Lys	
35 40 45	
Glu Ser Val Ile Asn Gly Ile Tyr Asn Cys Cys Glu Ser Asn Ile Glu	
50 55 60	
Ile Met Asp Lys Glu Gln Leu Leu Lys Ile Leu Asp Asn Leu Arg Cys	
65 70 75 80	
His Ser Ala His Val Cys Asn Ala Thr Asp Phe Trp Arg Leu Tyr Asn	
85 90 95	
Ser Leu Lys Arg Phe Thr His Thr Thr Ala Phe Phe Asn Thr Cys Lys	
100 105 110	
Pro Thr Ile Leu Ala Thr Leu Asn Thr Leu Ile Thr Leu Ile Leu Ser	
115 120 125	
Asn Lys Leu Leu Tyr Ala Ala Glu Met Val Glu Tyr Leu Glu Asn Gln	
130 135 140	
Leu Asp Ser Ser Asn Lys Ser Met Ser Gln Glu Leu Ala Glu Leu Leu	

145					150					155				160	
Glu	Met	Lys	Tyr	Ala	Leu	Ile	Asn	Leu	Val	Gln	Tyr	Arg	Ile	Leu	Pro
				165					170					175	
Met	Ile	Ile	Gly	Glu	Pro	Ile	Ile	Val	Ala	Gly	Phe	Ser	Gly	Lys	Glu
			180					185					190		
Pro	Ile	Ser	Asp	Tyr	Ser	Ala	Glu	Val	Glu	Arg	Leu	Met	Glu	Leu	Pro
		195					200					205			
Val	Lys	Thr	Asp	Ile	Val	Asn	Thr	Thr	Tyr	Asp	Phe	Leu	Ala	Arg	Lys
	210					215					220				
Gly	Ile	Asp	Thr	Ser	Asn	Asn	Ile	Ala	Glu	Tyr	Ile	Ala	Gly	Leu	Lys
225					230					235					240
Ile	Glu	Glu	Ile	Glu	Lys	Val	Glu	Lys	Tyr	Leu	Pro	Glu	Val	Ile	Ser
			245						250					255	
Thr	Ile	Ala	Asn	Ser	Asn	Ile	Ile	Lys	Asn	Lys	Lys	Ser	Ile	Phe	Pro
		260						265					270		
Ala	Asn	Ile	Asn	Asp	Lys	Gln	Ile	Met	Glu	Cys	Ser	Arg	Met	Leu	Asp
	275					280						285			
Thr	Ser	Glu	Lys	Tyr	Ser	Lys	Gly	Tyr	Lys	Thr	Asp	Gly	Ala	Val	Thr
	290					295					300				
Ser	Pro	Leu	Thr	Gly	Asn	Asn	Thr	Ile	Thr	Thr	Phe	Ile	Pro	Ile	Ser
305					310						315				320
Ala	Ser	Asp	Met	Gln	Lys	Phe	Thr	Ile	Leu	Glu	Tyr	Leu	Tyr	Ile	Met
			325						330					335	
Arg	Val	Met	Ala	Asn	Asn	Val	Lys	Lys	Lys	Asn	Glu	Gly	Lys	Asn	Asn
		340					345					350			
Gly	Gly	Val	Val	Met	His	Ile	Asn	Ser	Pro	Phe	Lys	Val	Ile	Asn	Leu
	355					360						365			
Pro	Lys	Cys													
	370														

<210> 189
 <211> 783
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(783)

<400> 189	
atg agc atc cgt ata aaa atc gat aaa ctg cgc caa att gtg gca tat	48
Met Ser Ile Arg Ile Lys Ile Asp Lys Leu Arg Gln Ile Val Ala Tyr	
1 5 10 15	
ttt tca gag ttc agt gaa gaa gtg tct ata aat gta gac tcg acg gat	96
Phe Ser Glu Phe Ser Glu Glu Val Ser Ile Asn Val Asp Ser Thr Asp	
20 25 30	
gag tta atg tat att ttt gcc gcc ttg ggc gga tct gta aac att tgg	144
Glu Leu Met Tyr Ile Phe Ala Ala Leu Gly Gly Ser Val Asn Ile Trp	
35 40 45	
gcc att ata cct ctc agt gca tca gtg ttc tac cgc gga gcc gaa aat	192
Ala Ile Ile Pro Leu Ser Ala Ser Val Phe Tyr Arg Gly Ala Glu Asn	
50 55 60	
att gtg ttt aat ctt ccg gtg tcc aag gta aaa tcg tgt ttg tgt agt	240
Ile Val Phe Asn Leu Pro Val Ser Lys Val Lys Ser Cys Leu Cys Ser	

65	70	75	80	
ttt cac aat gat gcc atc ata gat ata gaa cct gat ctg aaa aat aat				288
Phe His Asn Asp Ala Ile Ile Asp Ile Glu Pro Asp Leu Lys Asn Asn	85	90	95	
cta gta aaa ctt tct agt tat cat gta gta agt gtc gat tgt aac aag				336
Leu Val Lys Leu Ser Ser Tyr His Val Val Ser Val Asp Cys Asn Lys	100	105	110	
gaa ctg atg cct att agg aca gat act act att tgt cta agt ata gat				384
Glu Leu Met Pro Ile Arg Thr Asp Thr Thr Ile Cys Leu Ser Ile Asp	115	120	125	
caa aag aaa tct tat gtg ttt aat ttt cac aag tat gaa gaa aaa tgt				432
Gln Lys Lys Ser Tyr Val Phe Asn Phe His Lys Tyr Glu Glu Lys Cys	130	135	140	
tgt ggt aga acc gtc att cat cta gaa tgg ttg ttg ggc ttt atc aag				480
Cys Gly Arg Thr Val Ile His Leu Glu Trp Leu Leu Gly Phe Ile Lys	145	150	155	160
tgt att agt cag cat cag cat ctg gct att atg ttt aaa gat gac aat				528
Cys Ile Ser Gln His Gln His Leu Ala Ile Met Phe Lys Asp Asp Asn	165	170	175	
att att atg aag act cct ggt aat act gat gca ttt tcc agg gaa tat				576
Ile Ile Met Lys Thr Pro Gly Asn Thr Asp Ala Phe Ser Arg Glu Tyr	180	185	190	
tct atg act gaa tgt tct caa gaa cta caa aag ttt tct ttc aaa ata				624
Ser Met Thr Glu Cys Ser Gln Glu Leu Gln Lys Phe Ser Phe Lys Ile	195	200	205	
gct atc tcg tct ctc aac aaa cta cga gga ttc aaa aag aga gtc aat				672
Ala Ile Ser Ser Leu Asn Lys Leu Arg Gly Phe Lys Lys Arg Val Asn	210	215	220	
gtt ttt gaa act aga atc gta atg gat aat gac gat aac att tta gga				720
Val Phe Glu Thr Arg Ile Val Met Asp Asn Asp Asp Asn Ile Leu Gly	225	230	235	240
atg ttg ttt tcg gat aga gtt caa tcc ttt aag atc aac atc ttt atg				768
Met Leu Phe Ser Asp Arg Val Gln Ser Phe Lys Ile Asn Ile Phe Met	245	250	255	
gcg ttt tta gat taa				783
Ala Phe Leu Asp *	260			

<210> 190
 <211> 260
 <212> PRT
 <213> vaccinia virus

<400> 190
 Met Ser Ile Arg Ile Lys Ile Asp Lys Leu Arg Gln Ile Val Ala Tyr
 1 5 10 15

Phe	Ser	Glu	Phe	Ser	Glu	Glu	Val	Ser	Ile	Asn	Val	Asp	Ser	Thr	Asp		
			20					25					30				
Glu	Leu	Met	Tyr	Ile	Phe	Ala	Ala	Leu	Gly	Gly	Ser	Val	Asn	Ile	Trp		
		35					40					45					
Ala	Ile	Ile	Pro	Leu	Ser	Ala	Ser	Val	Phe	Tyr	Arg	Gly	Ala	Glu	Asn		
		50				55					60						
Ile	Val	Phe	Asn	Leu	Pro	Val	Ser	Lys	Val	Lys	Ser	Cys	Leu	Cys	Ser		
65				70					75						80		
Phe	His	Asn	Asp	Ala	Ile	Ile	Asp	Ile	Glu	Pro	Asp	Leu	Lys	Asn	Asn		
				85					90					95			
Leu	Val	Lys	Leu	Ser	Ser	Tyr	His	Val	Val	Ser	Val	Asp	Cys	Asn	Lys		
			100					105					110				
Glu	Leu	Met	Pro	Ile	Arg	Thr	Asp	Thr	Thr	Ile	Cys	Leu	Ser	Ile	Asp		
		115					120					125					
Gln	Lys	Lys	Ser	Tyr	Val	Phe	Asn	Phe	His	Lys	Tyr	Glu	Glu	Lys	Cys		
		130				135					140						
Cys	Gly	Arg	Thr	Val	Ile	His	Leu	Glu	Trp	Leu	Leu	Gly	Phe	Ile	Lys		
145				150					155						160		
Cys	Ile	Ser	Gln	His	Gln	His	Leu	Ala	Ile	Met	Phe	Lys	Asp	Asp	Asn		
				165				170						175			
Ile	Ile	Met	Lys	Thr	Pro	Gly	Asn	Thr	Asp	Ala	Phe	Ser	Arg	Glu	Tyr		
			180				185						190				
Ser	Met	Thr	Glu	Cys	Ser	Gln	Glu	Leu	Gln	Lys	Phe	Ser	Phe	Lys	Ile		
		195					200					205					
Ala	Ile	Ser	Ser	Leu	Asn	Lys	Leu	Arg	Gly	Phe	Lys	Lys	Arg	Val	Asn		
		210				215					220						
Val	Phe	Glu	Thr	Arg	Ile	Val	Met	Asp	Asn	Asp	Asp	Asn	Ile	Leu	Gly		
225				230					235						240		
Met	Leu	Phe	Ser	Asp	Arg	Val	Gln	Ser	Phe	Lys	Ile	Asn	Ile	Phe	Met		
				245					250					255			
Ala	Phe	Leu	Asp														
			260														

<210> 191
 <211> 1023
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1023)

<400> 191																
atg	ggt	ggc	gga	gta	agt	gtt	gag	ctc	cct	aaa	cgg	gat	ccg	cct	ccg	48
Met	Gly	Gly	Gly	Val	Ser	Val	Glu	Leu	Pro	Lys	Arg	Asp	Pro	Pro	Pro	
1				5					10					15		
gga gta ccc act gat gag atg tta tta aac gtg gat aaa atg cat gac																96
Gly	Val	Pro	Thr	Asp	Glu	Met	Leu	Leu	Asn	Val	Asp	Lys	Met	His	Asp	
			20					25					30			
gtg ata gct ccc gct aag ctt tta gaa tat gtg cat ata gga cca cta																144
Val	Ile	Ala	Pro	Ala	Lys	Leu	Leu	Glu	Tyr	Val	His	Ile	Gly	Pro	Leu	
		35					40					45				
gca aaa gat aaa gag gat aaa gta aag aaa aga tat cca gag ttt aga																192
Ala	Lys	Asp	Lys	Glu	Asp	Lys	Val	Lys	Lys	Arg	Tyr	Pro	Glu	Phe	Arg	
		50				55				60						

tta gtc aac aca gga ccc ggt ggt ctt tcg gca ttg tta aga caa tcg	240
Leu Val Asn Thr Gly Pro Gly Gly Leu Ser Ala Leu Leu Arg Gln Ser	
65 70 75 80	
tat aat gga acc gca ccc aat tgc tgt cgc act ttt aat cgt act cat	288
Tyr Asn Gly Thr Ala Pro Asn Cys Cys Arg Thr Phe Asn Arg Thr His	
85 90 95	
tat tgg aaa aag gat gga aag ata tca gat aag tat gaa gag ggt gca	336
Tyr Trp Lys Lys Asp Gly Lys Ile Ser Asp Lys Tyr Glu Glu Gly Ala	
100 105 110	
gta tta gaa tcg tgt tgg cca gac gtt cac gac act gga aaa tgc gat	384
Val Leu Glu Ser Cys Trp Pro Asp Val His Asp Thr Gly Lys Cys Asp	
115 120 125	
gtt gat tta ttc gac tgg tgt cag ggg gat acg ttc gat aga aac ata	432
Val Asp Leu Phe Asp Trp Cys Gln Gly Asp Thr Phe Asp Arg Asn Ile	
130 135 140	
tgc cat cag tgg atc ggt tca gcc ttt aat agg agt gat aga act gta	480
Cys His Gln Trp Ile Gly Ser Ala Phe Asn Arg Ser Asp Arg Thr Val	
145 150 155 160	
gag ggt caa caa tcg tta ata aat ctg tat aat aag atg caa aca tta	528
Glu Gly Gln Gln Ser Leu Ile Asn Leu Tyr Asn Lys Met Gln Thr Leu	
165 170 175	
tgt agt aaa gat gct agt gta cca ata tgt gaa tca ttt ttg cat cat	576
Cys Ser Lys Asp Ala Ser Val Pro Ile Cys Glu Ser Phe Leu His His	
180 185 190	
tta cgc gca cac aat aca gaa gat agc aaa gag atg atc gat tat att	624
Leu Arg Ala His Asn Thr Glu Asp Ser Lys Glu Met Ile Asp Tyr Ile	
195 200 205	
cta aga caa cag tct gcg gac ttt aaa cag aaa tat atg aga tgt agt	672
Leu Arg Gln Gln Ser Ala Asp Phe Lys Gln Lys Tyr Met Arg Cys Ser	
210 215 220	
tat ccc act aga gat aag tta gaa gag tca tta aaa tat gcg gaa cct	720
Tyr Pro Thr Arg Asp Lys Leu Glu Glu Ser Leu Lys Tyr Ala Glu Pro	
225 230 235 240	
cga gaa tgt tgg gat cca gag tgt tcg aat gcc aat gtt aat ttc ttg	768
Arg Glu Cys Trp Asp Pro Glu Cys Ser Asn Ala Asn Val Asn Phe Leu	
245 250 255	
cta aca cgt aat tat aat aat tta gga ctt tgc aat att gta cga tgt	816
Leu Thr Arg Asn Tyr Asn Asn Leu Gly Leu Cys Asn Ile Val Arg Cys	
260 265 270	
aat acc agc gtg aac aac tta cag atg gat aaa act tcc tca tta aga	864
Asn Thr Ser Val Asn Asn Leu Gln Met Asp Lys Thr Ser Ser Leu Arg	
275 280 285	
ttg tca tgt gga tta agc aat agt gat aga ttt tct act gtt ccc gtc	912
Leu Ser Cys Gly Leu Ser Asn Ser Asp Arg Phe Ser Thr Val Pro Val	

290	295	300	
aat aga gca aaa gta gtt	caa cat aat att	aaa cat tcg ttc gac cta	960
Asn Arg Ala Lys Val Val	Gln His Asn Ile	Lys His Ser Phe Asp Leu	
305	310	315 320	
aaa ttg cat ttg atc agt	tta tta tct ctc ttg	gta ata tgg ata cta	1008
Lys Leu His Leu Ile Ser	Leu Leu Ser Leu	Val Ile Trp Ile Leu	
	325	330 335	
att gta gct att taa			1023
Ile Val Ala Ile *			
340			

<210> 192
 <211> 340
 <212> PRT
 <213> vaccinia virus

<400> 192

Met Gly Gly Gly Val Ser Val Glu Leu Pro Lys Arg Asp Pro Pro Pro	
1 5 10 15	
Gly Val Pro Thr Asp Glu Met Leu Leu Asn Val Asp Lys Met His Asp	
20 25 30	
Val Ile Ala Pro Ala Lys Leu Leu Glu Tyr Val His Ile Gly Pro Leu	
35 40 45	
Ala Lys Asp Lys Glu Asp Lys Val Lys Lys Arg Tyr Pro Glu Phe Arg	
50 55 60	
Leu Val Asn Thr Gly Pro Gly Gly Leu Ser Ala Leu Leu Arg Gln Ser	
65 70 75 80	
Tyr Asn Gly Thr Ala Pro Asn Cys Cys Arg Thr Phe Asn Arg Thr His	
85 90 95	
Tyr Trp Lys Lys Asp Gly Lys Ile Ser Asp Lys Tyr Glu Glu Gly Ala	
100 105 110	
Val Leu Glu Ser Cys Trp Pro Asp Val His Asp Thr Gly Lys Cys Asp	
115 120 125	
Val Asp Leu Phe Asp Trp Cys Gln Gly Asp Thr Phe Asp Arg Asn Ile	
130 135 140	
Cys His Gln Trp Ile Gly Ser Ala Phe Asn Arg Ser Asp Arg Thr Val	
145 150 155 160	
Glu Gly Gln Gln Ser Leu Ile Asn Leu Tyr Asn Lys Met Gln Thr Leu	
165 170 175	
Cys Ser Lys Asp Ala Ser Val Pro Ile Cys Glu Ser Phe Leu His His	
180 185 190	
Leu Arg Ala His Asn Thr Glu Asp Ser Lys Glu Met Ile Asp Tyr Ile	
195 200 205	
Leu Arg Gln Gln Ser Ala Asp Phe Lys Gln Lys Tyr Met Arg Cys Ser	
210 215 220	
Tyr Pro Thr Arg Asp Lys Leu Glu Glu Ser Leu Lys Tyr Ala Glu Pro	
225 230 235 240	
Arg Glu Cys Trp Asp Pro Glu Cys Ser Asn Ala Asn Val Asn Phe Leu	
245 250 255	
Leu Thr Arg Asn Tyr Asn Asn Leu Gly Leu Cys Asn Ile Val Arg Cys	
260 265 270	
Asn Thr Ser Val Asn Asn Leu Gln Met Asp Lys Thr Ser Ser Leu Arg	
275 280 285	
Leu Ser Cys Gly Leu Ser Asn Ser Asp Arg Phe Ser Thr Val Pro Val	
290 295 300	

Asn Arg Ala Lys Val Val Gln His Asn Ile Lys His Ser Phe Asp Leu
 305 310 315 320
 Lys Leu His Leu Ile Ser Leu Leu Ser Leu Leu Val Ile Trp Ile Leu
 325 330 335
 Ile Val Ala Ile
 340

<210> 193
 <211> 753
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(753)

<400> 193
 atg ggt gcc gcg gca agc ata cag acg acg gtg aat aca ctc agc gaa 48
 Met Gly Ala Ala Ala Ser Ile Gln Thr Thr Val Asn Thr Leu Ser Glu
 1 5 10 15
 cgt atc tcg tct aaa tta gaa caa gaa gcg aac gct agt gct caa aca 96
 Arg Ile Ser Ser Lys Leu Glu Gln Glu Ala Asn Ala Ser Ala Gln Thr
 20 25 30
 aaa tgt gat ata gaa atc gga aat ttt tat atc cga caa aac cat gga 144
 Lys Cys Asp Ile Glu Ile Gly Asn Phe Tyr Ile Arg Gln Asn His Gly
 35 40 45
 tgt aac ctc act gtt aaa aat atg tgc tct gcg gac gcg gat gct cag 192
 Cys Asn Leu Thr Val Lys Asn Met Cys Ser Ala Asp Ala Asp Ala Gln
 50 55 60
 ttg gat gct gtg tta tca gcc gct aca gaa aca tat agt gga tta aca 240
 Leu Asp Ala Val Leu Ser Ala Ala Thr Glu Thr Tyr Ser Gly Leu Thr
 65 70 75 80
 ccg gaa caa aaa gca tac gtg cca gct atg ttt act gct gcg tta aac 288
 Pro Glu Gln Lys Ala Tyr Val Pro Ala Met Phe Thr Ala Ala Leu Asn
 85 90 95
 att cag acg agt gta aac act gtt gtt aga gat ttt gaa aat tat gtg 336
 Ile Gln Thr Ser Val Asn Thr Val Val Arg Asp Phe Glu Asn Tyr Val
 100 105 110
 aaa cag act tgt aat tct agc gcg gtc gtc gat aac aaa tta aag ata 384
 Lys Gln Thr Cys Asn Ser Ser Ala Val Val Asp Asn Lys Leu Lys Ile
 115 120 125
 caa aac gta atc ata gat gaa tgt tac gga gcc cca gga tct cca aca 432
 Gln Asn Val Ile Ile Asp Glu Cys Tyr Gly Ala Pro Gly Ser Pro Thr
 130 135 140
 aat ttg gaa ttt att aat aca gga tct agc aaa gga aat tgt gcc att 480
 Asn Leu Glu Phe Ile Asn Thr Gly Ser Ser Lys Gly Asn Cys Ala Ile
 145 150 155 160
 aaa gcg ttg atg caa ttg acg act aag gcc act act caa ata gca cct 528

Lys	Ala	Leu	Met	Gln	Leu	Thr	Thr	Lys	Ala	Thr	Thr	Gln	Ile	Ala	Pro	
				165					170					175		
aga	caa	gtt	gct	ggg	aca	gga	gtt	cag	ttt	tat	atg	att	gtt	atc	ggg	576
Arg	Gln	Val	Ala	Gly	Thr	Gly	Val	Gln	Phe	Tyr	Met	Ile	Val	Ile	Gly	
			180					185					190			
gtt	ata	ata	ttg	gca	gcg	ttg	ttt	atg	tac	tat	gcc	aag	cgt	atg	ttg	624
Val	Ile	Ile	Leu	Ala	Ala	Leu	Phe	Met	Tyr	Tyr	Ala	Lys	Arg	Met	Leu	
			195				200					205				
ttc	aca	tcc	acc	aat	gat	aaa	atc	aaa	ctt	att	tta	gcc	aat	aag	gaa	672
Phe	Thr	Ser	Thr	Asn	Asp	Lys	Ile	Lys	Leu	Ile	Leu	Ala	Asn	Lys	Glu	
	210					215					220					
aac	gtc	cat	tgg	act	act	tac	atg	gac	aca	ttc	ttt	aga	act	tct	ccg	720
Asn	Val	His	Trp	Thr	Thr	Tyr	Met	Asp	Thr	Phe	Phe	Arg	Thr	Ser	Pro	
	225				230					235					240	
atg	gtt	att	gct	acc	acg	gat	atg	caa	aac	tga						753
Met	Val	Ile	Ala	Thr	Thr	Asp	Met	Gln	Asn	*						
				245				250								

<210> 194
 <211> 250
 <212> PRT
 <213> vaccinia virus

<400> 194

Met	Gly	Ala	Ala	Ala	Ser	Ile	Gln	Thr	Thr	Val	Asn	Thr	Leu	Ser	Glu	
1				5					10					15		
Arg	Ile	Ser	Ser	Lys	Leu	Glu	Gln	Glu	Ala	Asn	Ala	Ser	Ala	Gln	Thr	
			20					25					30			
Lys	Cys	Asp	Ile	Glu	Ile	Gly	Asn	Phe	Tyr	Ile	Arg	Gln	Asn	His	Gly	
		35					40					45				
Cys	Asn	Leu	Thr	Val	Lys	Asn	Met	Cys	Ser	Ala	Asp	Ala	Asp	Ala	Gln	
	50					55					60					
Leu	Asp	Ala	Val	Leu	Ser	Ala	Ala	Thr	Glu	Thr	Tyr	Ser	Gly	Leu	Thr	
65					70					75					80	
Pro	Glu	Gln	Lys	Ala	Tyr	Val	Pro	Ala	Met	Phe	Thr	Ala	Ala	Leu	Asn	
				85					90					95		
Ile	Gln	Thr	Ser	Val	Asn	Thr	Val	Val	Arg	Asp	Phe	Glu	Asn	Tyr	Val	
			100					105					110			
Lys	Gln	Thr	Cys	Asn	Ser	Ser	Ala	Val	Val	Asp	Asn	Lys	Leu	Lys	Ile	
		115					120				125					
Gln	Asn	Val	Ile	Ile	Asp	Glu	Cys	Tyr	Gly	Ala	Pro	Gly	Ser	Pro	Thr	
	130					135					140					
Asn	Leu	Glu	Phe	Ile	Asn	Thr	Gly	Ser	Ser	Lys	Gly	Asn	Cys	Ala	Ile	
145					150					155					160	
Lys	Ala	Leu	Met	Gln	Leu	Thr	Thr	Lys	Ala	Thr	Thr	Gln	Ile	Ala	Pro	
				165					170					175		
Arg	Gln	Val	Ala	Gly	Thr	Gly	Val	Gln	Phe	Tyr	Met	Ile	Val	Ile	Gly	
			180					185					190			
Val	Ile	Ile	Leu	Ala	Ala	Leu	Phe	Met	Tyr	Tyr	Ala	Lys	Arg	Met	Leu	
		195				200						205				
Phe	Thr	Ser	Thr	Asn	Asp	Lys	Ile	Lys	Leu	Ile	Leu	Ala	Asn	Lys	Glu	
	210					215					220					
Asn	Val	His	Trp	Thr	Thr	Tyr	Met	Asp	Thr	Phe	Phe	Arg	Thr	Ser	Pro	

225 230 235 240
 Met Val Ile Ala Thr Thr Asp Met Gln Asn
 245 250

<210> 195
 <211> 258
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(258)

<400> 195
 atg gaa gtt atc gct gat cgt cta gac gat ata gtg aaa caa aat ata 48
 Met Glu Val Ile Ala Asp Arg Leu Asp Asp Ile Val Lys Gln Asn Ile
 1 5 10 15

 gcg gat gaa aaa ttt gta gat ttt gtt ata cac ggt cta gag cat caa 96
 Ala Asp Glu Lys Phe Val Asp Phe Val Ile His Gly Leu Glu His Gln
 20 25 30

 tgt cct gct ata ctt cga cca tta att agg ttg ttt att gat ata cta 144
 Cys Pro Ala Ile Leu Arg Pro Leu Ile Arg Leu Phe Ile Asp Ile Leu
 35 40 45

 tta ttt gtt ata gta att tat att ttt acg gta cgt cta gta agt aga 192
 Leu Phe Val Ile Val Ile Tyr Ile Phe Thr Val Arg Leu Val Ser Arg
 50 55 60

 aat tat caa atg ttg ttg gtg gtg cta gtc atc aca tta act att ttt 240
 Asn Tyr Gln Met Leu Leu Val Val Leu Val Ile Thr Leu Thr Ile Phe
 65 70 75 80

 tat tac ttt ata cta taa 258
 Tyr Tyr Phe Ile Leu *
 85

<210> 196
 <211> 85
 <212> PRT
 <213> vaccinia virus

<400> 196
 Met Glu Val Ile Ala Asp Arg Leu Asp Asp Ile Val Lys Gln Asn Ile
 1 5 10 15
 Ala Asp Glu Lys Phe Val Asp Phe Val Ile His Gly Leu Glu His Gln
 20 25 30
 Cys Pro Ala Ile Leu Arg Pro Leu Ile Arg Leu Phe Ile Asp Ile Leu
 35 40 45
 Leu Phe Val Ile Val Ile Tyr Ile Phe Thr Val Arg Leu Val Ser Arg
 50 55 60
 Asn Tyr Gln Met Leu Leu Val Val Leu Val Ile Thr Leu Thr Ile Phe
 65 70 75 80
 Tyr Tyr Phe Ile Leu
 85

<210> 197
 <211> 1050
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1050)

<400> 197

atg aat acc cgt acc gat gtt aca aac gat aat ata gac aaa aat cca	48
Met Asn Thr Arg Thr Asp Val Thr Asn Asp Asn Ile Asp Lys Asn Pro	
1 5 10 15	
acc aaa cga ggt gat aga aat ata cca gga aga aat gaa aga ttt aat	96
Thr Lys Arg Gly Asp Arg Asn Ile Pro Gly Arg Asn Glu Arg Phe Asn	
20 25 30	
gac caa aat aga ttc aac aac gat ata cca aag cct aaa cca aga cta	144
Asp Gln Asn Arg Phe Asn Asn Asp Ile Pro Lys Pro Lys Pro Arg Leu	
35 40 45	
cag cct aat cag cca ccg aaa caa gat aat aaa tgc aga gaa gag aat	192
Gln Pro Asn Gln Pro Pro Lys Gln Asp Asn Lys Cys Arg Glu Glu Asn	
50 55 60	
gga gat ttt atc aat att aga ttg tgt gcc tac gag aag gaa tat tgc	240
Gly Asp Phe Ile Asn Ile Arg Leu Cys Ala Tyr Glu Lys Glu Tyr Cys	
65 70 75 80	
aat gac gga tat cta tct cct gcc tat tat atg tta aaa cag gtg gat	288
Asn Asp Gly Tyr Leu Ser Pro Ala Tyr Tyr Met Leu Lys Gln Val Asp	
85 90 95	
gat gaa gaa atg agt tgc tgg tca gaa cta tcg tcg ttg gtg aga tcc	336
Asp Glu Glu Met Ser Cys Trp Ser Glu Leu Ser Ser Leu Val Arg Ser	
100 105 110	
aga aag gcg gtg gga ttt cct cta tta aag gcg gct aaa cgt att tct	384
Arg Lys Ala Val Gly Phe Pro Leu Leu Lys Ala Ala Lys Arg Ile Ser	
115 120 125	
cat gga tcg atg cta tat ttt gaa cag ttc aaa aac agt aaa gtt gtg	432
His Gly Ser Met Leu Tyr Phe Glu Gln Phe Lys Asn Ser Lys Val Val	
130 135 140	
aaa tta acc ccg caa gtt aaa tgt tta aat gat act gtt att ttt caa	480
Lys Leu Thr Pro Gln Val Lys Cys Leu Asn Asp Thr Val Ile Phe Gln	
145 150 155 160	
act gta gtt att tta tat tcc atg tat aaa cgt ggc ata tat tct aac	528
Thr Val Val Ile Leu Tyr Ser Met Tyr Lys Arg Gly Ile Tyr Ser Asn	
165 170 175	
gaa ttt tgt ttt aat ctg gtt tct att ccc aga acg aac att gtt ttt	576
Glu Phe Cys Phe Asn Leu Val Ser Ile Pro Arg Thr Asn Ile Val Phe	
180 185 190	
tct gtt aat caa tta atg ttt aac att tgt aca gac ata ttg gta gtt	624

Ser	Val	Asn	Gln	Leu	Met	Phe	Asn	Ile	Cys	Thr	Asp	Ile	Leu	Val	Val		
		195					200					205					
cta	tct	att	tgc	ggc	aac	cgg	ctc	tat	aga	aca	aat	cta	cca	cag	tcg	672	
Leu	Ser	Ile	Cys	Gly	Asn	Arg	Leu	Tyr	Arg	Thr	Asn	Leu	Pro	Gln	Ser		
		210				215					220						
tgt	tac	tta	aat	ttc	ata	cac	ggc	cat	gag	aca	ata	gcc	cgt	aga	gga	720	
Cys	Tyr	Leu	Asn	Phe	Ile	His	Gly	His	Glu	Thr	Ile	Ala	Arg	Arg	Gly		
		225			230					235					240		
tat	gaa	cac	tcc	aat	tac	ttt	ttc	gag	tgg	ttg	ata	aaa	aat	cac	ata	768	
Tyr	Glu	His	Ser	Asn	Tyr	Phe	Phe	Glu	Trp	Leu	Ile	Lys	Asn	His	Ile		
				245					250					255			
tcg	cta	ttg	acc	aag	caa	acg	atg	gat	att	ctc	aag	gta	aag	aaa	aag	816	
Ser	Leu	Leu	Thr	Lys	Gln	Thr	Met	Asp	Ile	Leu	Lys	Val	Lys	Lys	Lys		
			260					265					270				
tat	gct	aca	gga	gca	cca	gta	aat	agg	ttg	tta	gaa	cct	ggt	aca	ctg	864	
Tyr	Ala	Thr	Gly	Ala	Pro	Val	Asn	Arg	Leu	Leu	Glu	Pro	Gly	Thr	Leu		
		275					280					285					
gta	tat	gtg	ccc	aaa	gaa	gat	tat	tac	ttt	ata	ggc	ata	tca	ctc	acc	912	
Val	Tyr	Val	Pro	Lys	Glu	Asp	Tyr	Tyr	Phe	Ile	Gly	Ile	Ser	Leu	Thr		
		290				295					300						
gat	gtg	tca	att	agc	gat	aat	gtc	aga	gta	tta	ttt	tcc	aca	gat	gga	960	
Asp	Val	Ser	Ile	Ser	Asp	Asn	Val	Arg	Val	Leu	Phe	Ser	Thr	Asp	Gly		
					310					315					320		
ata	gtg	tta	gaa	ata	gaa	gac	ttt	aat	atc	aag	cat	tta	ttt	atg	gca	1008	
Ile	Val	Leu	Glu	Ile	Glu	Asp	Phe	Asn	Ile	Lys	His	Leu	Phe	Met	Ala		
				325					330					335			
ggt	gag	atg	ttt	gtt	aga	agt	cag	tct	agt	act	att	ata	gta			1050	
Gly	Glu	Met	Phe	Val	Arg	Ser	Gln	Ser	Ser	Thr	Ile	Ile	Val				
			340					345					350				

<210> 198
 <211> 350
 <212> PRT
 <213> vaccinia virus

<400> 198

Met	Asn	Thr	Arg	Thr	Asp	Val	Thr	Asn	Asp	Asn	Ile	Asp	Lys	Asn	Pro		
1				5				10						15			
Thr	Lys	Arg	Gly	Asp	Arg	Asn	Ile	Pro	Gly	Arg	Asn	Glu	Arg	Phe	Asn		
			20					25					30				
Asp	Gln	Asn	Arg	Phe	Asn	Asn	Asp	Ile	Pro	Lys	Pro	Lys	Pro	Arg	Leu		
		35					40					45					
Gln	Pro	Asn	Gln	Pro	Pro	Lys	Gln	Asp	Asn	Lys	Cys	Arg	Glu	Glu	Asn		
		50				55					60						
Gly	Asp	Phe	Ile	Asn	Ile	Arg	Leu	Cys	Ala	Tyr	Glu	Lys	Glu	Tyr	Cys		
65				70				75						80			
Asn	Asp	Gly	Tyr	Leu	Ser	Pro	Ala	Tyr	Tyr	Met	Leu	Lys	Gln	Val	Asp		
				85				90						95			

Asp	Glu	Glu	Met	Ser	Cys	Trp	Ser	Glu	Leu	Ser	Ser	Leu	Val	Arg	Ser	
			100					105					110			
Arg	Lys	Ala	Val	Gly	Phe	Pro	Leu	Leu	Lys	Ala	Ala	Lys	Arg	Ile	Ser	
		115					120					125				
His	Gly	Ser	Met	Leu	Tyr	Phe	Glu	Gln	Phe	Lys	Asn	Ser	Lys	Val	Val	
	130					135					140					
Lys	Leu	Thr	Pro	Gln	Val	Lys	Cys	Leu	Asn	Asp	Thr	Val	Ile	Phe	Gln	
145					150					155					160	
Thr	Val	Val	Ile	Leu	Tyr	Ser	Met	Tyr	Lys	Arg	Gly	Ile	Tyr	Ser	Asn	
				165					170					175		
Glu	Phe	Cys	Phe	Asn	Leu	Val	Ser	Ile	Pro	Arg	Thr	Asn	Ile	Val	Phe	
			180					185					190			
Ser	Val	Asn	Gln	Leu	Met	Phe	Asn	Ile	Cys	Thr	Asp	Ile	Leu	Val	Val	
		195					200					205				
Leu	Ser	Ile	Cys	Gly	Asn	Arg	Leu	Tyr	Arg	Thr	Asn	Leu	Pro	Gln	Ser	
		210				215					220					
Cys	Tyr	Leu	Asn	Phe	Ile	His	Gly	His	Glu	Thr	Ile	Ala	Arg	Arg	Gly	
225					230					235					240	
Tyr	Glu	His	Ser	Asn	Tyr	Phe	Phe	Glu	Trp	Leu	Ile	Lys	Asn	His	Ile	
				245					250					255		
Ser	Leu	Leu	Thr	Lys	Gln	Thr	Met	Asp	Ile	Leu	Lys	Val	Lys	Lys	Lys	
			260					265						270		
Tyr	Ala	Thr	Gly	Ala	Pro	Val	Asn	Arg	Leu	Leu	Glu	Pro	Gly	Thr	Leu	
		275					280					285				
Val	Tyr	Val	Pro	Lys	Glu	Asp	Tyr	Tyr	Phe	Ile	Gly	Ile	Ser	Leu	Thr	
		290				295					300					
Asp	Val	Ser	Ile	Ser	Asp	Asn	Val	Arg	Val	Leu	Phe	Ser	Thr	Asp	Gly	
305					310					315					320	
Ile	Val	Leu	Glu	Ile	Glu	Asp	Phe	Asn	Ile	Lys	His	Leu	Phe	Met	Ala	
				325					330					335		
Gly	Glu	Met	Phe	Val	Arg	Ser	Gln	Ser	Ser	Thr	Ile	Ile	Val			
			340					345					350			

<210> 199
 <211> 756
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(756)

<400> 199																
atg	agt	cta	ctg	cta	gaa	aac	ctc	atc	gaa	gaa	gat	acc	ata	ttt	ttt	48
Met	Ser	Leu	Leu	Leu	Glu	Asn	Leu	Ile	Glu	Glu	Asp	Thr	Ile	Phe	Phe	
1				5					10					15		
gca gga agt ata tct gag tat gat gat tta caa atg gtt att gcc ggc																96
Ala	Gly	Ser	Ile	Ser	Glu	Tyr	Asp	Asp	Leu	Gln	Met	Val	Ile	Ala	Gly	
			20					25					30			
gca aaa tcc aaa ttt cca aga tct atg ctt tct att ttt aat ata gta																144
Ala	Lys	Ser	Lys	Phe	Pro	Arg	Ser	Met	Leu	Ser	Ile	Phe	Asn	Ile	Val	
			35					40					45			
cct aga acg atg tca aaa tat gag ttg gag ttg att cat aac gaa aat																192
Pro	Arg	Thr	Met	Ser	Lys	Tyr	Glu	Leu	Glu	Leu	Ile	His	Asn	Glu	Asn	
			50			55					60					

atc	aca	gga	gca	atg	ttt	acc	aca	atg	tat	aat	ata	aga	aac	aat	ttg	240
Ile	Thr	Gly	Ala	Met	Phe	Thr	Thr	Met	Tyr	Asn	Ile	Arg	Asn	Asn	Leu	
65					70					75					80	
ggt	cta	ggc	gat	gat	aaa	cta	act	att	gaa	gcc	att	gaa	aac	tat	ttc	288
Gly	Leu	Gly	Asp	Asp	Lys	Leu	Thr	Ile	Glu	Ala	Ile	Glu	Asn	Tyr	Phe	
					85				90					95		
ttg	gat	cct	aac	aat	gag	gtt	atg	cct	ctt	atc	att	aat	aat	acg	gat	336
Leu	Asp	Pro	Asn	Asn	Glu	Val	Met	Pro	Leu	Ile	Ile	Asn	Asn	Thr	Asp	
			100					105					110			
atg	act	gcc	gtc	att	cct	aaa	aaa	agt	ggt	agg	aga	aag	aat	aag	aac	384
Met	Thr	Ala	Val	Ile	Pro	Lys	Lys	Ser	Gly	Arg	Arg	Lys	Asn	Lys	Asn	
		115					120					125				
atg	gtt	att	ttc	cgt	caa	gga	tca	tca	cct	atc	ttg	tgt	att	ttc	gaa	432
Met	Val	Ile	Phe	Arg	Gln	Gly	Ser	Ser	Pro	Ile	Leu	Cys	Ile	Phe	Glu	
	130					135					140					
act	cgt	aaa	aag	att	aat	att	tat	aaa	gaa	aat	atg	gaa	tcc	gcg	tcg	480
Thr	Arg	Lys	Lys	Ile	Asn	Ile	Tyr	Lys	Glu	Asn	Met	Glu	Ser	Ala	Ser	
145					150					155					160	
act	gag	tat	aca	cct	atc	gga	gac	aac	aag	gct	ttg	ata	tct	aaa	tat	528
Thr	Glu	Tyr	Thr	Pro	Ile	Gly	Asp	Asn	Lys	Ala	Leu	Ile	Ser	Lys	Tyr	
				165					170					175		
gcg	gga	att	aat	gtc	ctg	aat	gtg	tat	tct	cct	tcc	aca	tcc	atg	aga	576
Ala	Gly	Ile	Asn	Val	Leu	Asn	Val	Tyr	Ser	Pro	Ser	Thr	Ser	Met	Arg	
			180					185					190			
ttg	aat	gcc	att	tac	gga	ttc	acc	aat	aaa	aat	aaa	cta	gag	aaa	ctt	624
Leu	Asn	Ala	Ile	Tyr	Gly	Phe	Thr	Asn	Lys	Asn	Lys	Leu	Glu	Lys	Leu	
		195					200					205				
agt	act	aat	aag	gaa	cta	gaa	tcg	tat	agt	tct	agc	cct	ctt	caa	gaa	672
Ser	Thr	Asn	Lys	Glu	Leu	Glu	Ser	Tyr	Ser	Ser	Ser	Pro	Leu	Gln	Glu	
	210					215					220					
ccc	att	agg	tta	aat	gat	ttt	ctg	gga	cta	ttg	gaa	tgt	gtt	aaa	aag	720
Pro	Ile	Arg	Leu	Asn	Asp	Phe	Leu	Gly	Leu	Leu	Glu	Cys	Val	Lys	Lys	
225					230					235					240	
aat	att	cct	cta	aca	gat	att	ccg	aca	aag	gat	tga					756
Asn	Ile	Pro	Leu	Thr	Asp	Ile	Pro	Thr	Lys	Asp	*					
			245						250							

<210> 200
 <211> 251
 <212> PRT
 <213> vaccinia virus

<400> 200
 Met Ser Leu Leu Leu Glu Asn Leu Ile Glu Glu Asp Thr Ile Phe Phe
 1 5 10 15
 Ala Gly Ser Ile Ser Glu Tyr Asp Asp Leu Gln Met Val Ile Ala Gly

65	70	75	80	
atg atc tat gga tta cca tgg atg aca act caa aca tct gcg tta tca	288			
Met Ile Tyr Gly Leu Pro Trp Met Thr Thr Gln Thr Ser Ala Leu Ser				
85 90 95				
ata aat agt aaa ccg ata gtg tat aaa gat tgt gca aag ctt ttg cga	336			
Ile Asn Ser Lys Pro Ile Val Tyr Lys Asp Cys Ala Lys Leu Leu Arg				
100 105 110				
tca ata aat gga tca caa cca gta tct ctt aac gat gtt ctt cgc aga	384			
Ser Ile Asn Gly Ser Gln Pro Val Ser Leu Asn Asp Val Leu Arg Arg				
115 120 125				
tga	387			
*				

<210> 202
 <211> 128
 <212> PRT
 <213> vaccinia virus

<400> 202

Met Glu Asn Val Pro Asn Val Tyr Phe Asn Pro Val Phe Ile Glu Pro	
1 5 10 15	
Thr Phe Lys His Ser Leu Leu Ser Val Tyr Lys His Arg Leu Ile Val	
20 25 30	
Leu Phe Glu Val Phe Val Val Phe Ile Leu Ile Tyr Val Phe Phe Arg	
35 40 45	
Ser Glu Leu Asn Met Phe Phe Met Pro Lys Arg Lys Ile Pro Asp Pro	
50 55 60	
Ile Asp Arg Leu Arg Arg Ala Asn Leu Ala Cys Glu Asp Asp Lys Leu	
65 70 75 80	
Met Ile Tyr Gly Leu Pro Trp Met Thr Thr Gln Thr Ser Ala Leu Ser	
85 90 95	
Ile Asn Ser Lys Pro Ile Val Tyr Lys Asp Cys Ala Lys Leu Leu Arg	
100 105 110	
Ser Ile Asn Gly Ser Gln Pro Val Ser Leu Asn Asp Val Leu Arg Arg	
115 120 125	

<210> 203
 <211> 462
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(462)

<400> 203

atg gat cac aac cag tat ctc tta acg atg ttc ttc gca gat gat gat	48
Met Asp His Asn Gln Tyr Leu Leu Thr Met Phe Phe Ala Asp Asp Asp	
1 5 10 15	
tca ttt ttt aag tat ttg gct agt caa gat gat gaa tct tca tta tct	96
Ser Phe Phe Lys Tyr Leu Ala Ser Gln Asp Asp Glu Ser Ser Leu Ser	

20										25										30										
gat	ata	ttg	caa	atc	act	caa	tat	cta	gac	ttt	ctg	tta	tta	tta	ttg	144														
Asp	Ile	Leu	Gln	Ile	Thr	Gln	Tyr	Leu	Asp	Phe	Leu	Leu	Leu	Leu	Leu															
			35				40				45																			
atc	caa	tca	aaa	aat	aaa	tta	gaa	gcc	gtg	ggg	cat	tgt	tat	gaa	tct	192														
Ile	Gln	Ser	Lys	Asn	Lys	Leu	Glu	Ala	Val	Gly	His	Cys	Tyr	Glu	Ser															
			50				55				60																			
ctt	tca	gag	gaa	tac	aga	caa	ttg	aca	aaa	ttc	aca	gac	tct	caa	gat	240														
Leu	Ser	Glu	Glu	Tyr	Arg	Gln	Leu	Thr	Lys	Phe	Thr	Asp	Ser	Gln	Asp															
			65				70				75				80															
ttt	aaa	aaa	ctg	ttt	aac	aag	gtc	cct	att	gtt	aca	gat	gga	agg	gtc	288														
Phe	Lys	Lys	Leu	Phe	Asn	Lys	Val	Pro	Ile	Val	Thr	Asp	Gly	Arg	Val															
			85				90				95																			
aaa	ctt	aat	aaa	gga	tat	ttg	ttc	gac	ttt	gtg	att	agt	ttg	atg	cga	336														
Lys	Leu	Asn	Lys	Gly	Tyr	Leu	Phe	Asp	Phe	Val	Ile	Ser	Leu	Met	Arg															
			100				105				110																			
ttc	aaa	aaa	gaa	tca	gct	cta	gct	acc	acc	gca	ata	gat	cct	gtt	aga	384														
Phe	Lys	Lys	Glu	Ser	Ala	Leu	Ala	Thr	Thr	Ala	Ile	Asp	Pro	Val	Arg															
			115				120				125																			
tac	ata	gat	cct	cgt	cgc	gat	atc	gca	ttt	tct	aac	gtg	atg	gat	ata	432														
Tyr	Ile	Asp	Pro	Arg	Arg	Asp	Ile	Ala	Phe	Ser	Asn	Val	Met	Asp	Ile															
			130				135				140																			
tta	aag	tcg	aat	aaa	gtg	aac	aat	aat	taa							462														
Leu	Lys	Ser	Asn	Lys	Val	Asn	Asn	Asn	*																					
			145				150																							

<210> 204
 <211> 153
 <212> PRT
 <213> vaccinia virus

<400> 204

Met	Asp	His	Asn	Gln	Tyr	Leu	Leu	Thr	Met	Phe	Phe	Ala	Asp	Asp	Asp	
1				5					10					15		
Ser	Phe	Phe	Lys	Tyr	Leu	Ala	Ser	Gln	Asp	Asp	Glu	Ser	Ser	Leu	Ser	
			20				25				30					
Asp	Ile	Leu	Gln	Ile	Thr	Gln	Tyr	Leu	Asp	Phe	Leu	Leu	Leu	Leu	Leu	
			35				40				45					
Ile	Gln	Ser	Lys	Asn	Lys	Leu	Glu	Ala	Val	Gly	His	Cys	Tyr	Glu	Ser	
			50				55				60					
Leu	Ser	Glu	Glu	Tyr	Arg	Gln	Leu	Thr	Lys	Phe	Thr	Asp	Ser	Gln	Asp	
			65				70				75				80	
Phe	Lys	Lys	Leu	Phe	Asn	Lys	Val	Pro	Ile	Val	Thr	Asp	Gly	Arg	Val	
			85				90				95					
Lys	Leu	Asn	Lys	Gly	Tyr	Leu	Phe	Asp	Phe	Val	Ile	Ser	Leu	Met	Arg	
			100				105				110					
Phe	Lys	Lys	Glu	Ser	Ala	Leu	Ala	Thr	Thr	Ala	Ile	Asp	Pro	Val	Arg	
			115				120				125					
Tyr	Ile	Asp	Pro	Arg	Arg	Asp	Ile	Ala	Phe	Ser	Asn	Val	Met	Asp	Ile	
			130				135				140					

Leu Lys Ser Asn Lys Val Asn Asn Asn
145 150

<210> 205
<211> 534
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(534)

<400> 205
atg aac ggc gga cat att cag ttg ata atc ggc ccc atg ttt tca ggt 48
Met Asn Gly Gly His Ile Gln Leu Ile Ile Gly Pro Met Phe Ser Gly
1 5 10 15
aaa agt aca gaa tta att aga cga gtt aga cgt tat caa ata gct caa 96
Lys Ser Thr Glu Leu Ile Arg Arg Val Arg Arg Tyr Gln Ile Ala Gln
20 25 30
tat aaa tgc gtg act ata aaa tat tct aac gat aat aga tac gga acg 144
Tyr Lys Cys Val Thr Ile Lys Tyr Ser Asn Asp Asn Arg Tyr Gly Thr
35 40 45
gga cta tgg acg cat gat aag aat aat ttt gaa gca ttg gaa gca act 192
Gly Leu Trp Thr His Asp Lys Asn Asn Phe Glu Ala Leu Glu Ala Thr
50 55 60
aaa cta tgt gat gtc ttg gaa tca att aca gat ttc tcc gtg ata ggt 240
Lys Leu Cys Asp Val Leu Glu Ser Ile Thr Asp Phe Ser Val Ile Gly
65 70 75 80
atc gat gaa gga cag ttc ttt cca gac att gtt gaa ttc tgt gag cgt 288
Ile Asp Glu Gly Gln Phe Phe Pro Asp Ile Val Glu Phe Cys Glu Arg
85 90 95
atg gca aac gaa gga aaa ata gtt ata gta gcc gca ctc gat ggg aca 336
Met Ala Asn Glu Gly Lys Ile Val Ile Val Ala Ala Leu Asp Gly Thr
100 105 110
ttt caa cgt aaa ccg ttt aat aat att ttg aat ctt att cca tta tct 384
Phe Gln Arg Lys Pro Phe Asn Asn Ile Leu Asn Leu Ile Pro Leu Ser
115 120 125
gaa atg gtg gta aaa cta act gct gtg tgt atg aaa tgc ttt aag gag 432
Glu Met Val Val Lys Leu Thr Ala Val Cys Met Lys Cys Phe Lys Glu
130 135 140
gct tcc ttt tct aaa cga ttg ggt gag gaa acc gag ata gag ata ata 480
Ala Ser Phe Ser Lys Arg Leu Gly Glu Glu Thr Glu Ile Glu Ile Ile
145 150 155 160
gga ggt aat gat atg tat caa tcg gtg tgt aga aag tgt tac atc gac 528
Gly Gly Asn Asp Met Tyr Gln Ser Val Cys Arg Lys Cys Tyr Ile Asp
165 170 175
tca taa 534

Ser *

<210> 206
<211> 177
<212> PRT
<213> vaccinia virus

<400> 206
Met Asn Gly Gly His Ile Gln Leu Ile Ile Gly Pro Met Phe Ser Gly
1 5 10 15
Lys Ser Thr Glu Leu Ile Arg Arg Val Arg Arg Tyr Gln Ile Ala Gln
20 25 30
Tyr Lys Cys Val Thr Ile Lys Tyr Ser Asn Asp Asn Arg Tyr Gly Thr
35 40 45
Gly Leu Trp Thr His Asp Lys Asn Asn Phe Glu Ala Leu Glu Ala Thr
50 55 60
Lys Leu Cys Asp Val Leu Glu Ser Ile Thr Asp Phe Ser Val Ile Gly
65 70 75 80
Ile Asp Glu Gly Gln Phe Phe Pro Asp Ile Val Glu Phe Cys Glu Arg
85 90 95
Met Ala Asn Glu Gly Lys Ile Val Ile Val Ala Ala Leu Asp Gly Thr
100 105 110
Phe Gln Arg Lys Pro Phe Asn Asn Ile Leu Asn Leu Ile Pro Leu Ser
115 120 125
Glu Met Val Val Lys Leu Thr Ala Val Cys Met Lys Cys Phe Lys Glu
130 135 140
Ala Ser Phe Ser Lys Arg Leu Gly Glu Glu Thr Glu Ile Glu Ile Ile
145 150 155 160
Gly Gly Asn Asp Met Tyr Gln Ser Val Cys Arg Lys Cys Tyr Ile Asp
165 170 175
Ser

<210> 207
<211> 1002
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(1002)

<400> 207
atg gat gtt gtg tcg tta gat aaa ccg ttt atg tat ttt gag gaa att 48
Met Asp Val Val Ser Leu Asp Lys Pro Phe Met Tyr Phe Glu Glu Ile
1 5 10 15
gat aat gag tta gat tac gaa cca gaa agt gca aat gag gtc gca aaa 96
Asp Asn Glu Leu Asp Tyr Glu Pro Glu Ser Ala Asn Glu Val Ala Lys
20 25 30
aaa ctg ccg tat caa gga cag tta aaa cta tta cta gga gaa tta ttt 144
Lys Leu Pro Tyr Gln Gly Gln Leu Lys Leu Leu Leu Gly Glu Leu Phe
35 40 45
ttt ctt agt aag tta cag cga cac ggt ata tta gat ggt gcc acc gta 192

Phe	Leu	Ser	Lys	Leu	Gln	Arg	His	Gly	Ile	Leu	Asp	Gly	Ala	Thr	Val		
	50					55					60						
gtg	tat	ata	gga	tct	gct	ccc	ggg	aca	cat	ata	cgt	tat	ttg	aga	gat	240	
Val	Tyr	Ile	Gly	Ser	Ala	Pro	Gly	Thr	His	Ile	Arg	Tyr	Leu	Arg	Asp		
	65				70					75					80		
cat	ttc	tat	aat	tta	gga	gtg	atc	atc	aaa	tgg	atg	cta	att	gac	ggc	288	
His	Phe	Tyr	Asn	Leu	Gly	Val	Ile	Ile	Lys	Trp	Met	Leu	Ile	Asp	Gly		
				85					90					95			
cgc	cat	cat	gat	cct	att	tta	aat	gga	ttg	cgt	gat	gtg	act	cta	gtg	336	
Arg	His	His	Asp	Pro	Ile	Leu	Asn	Gly	Leu	Arg	Asp	Val	Thr	Leu	Val		
			100					105					110				
act	cgg	ttc	gtt	gat	gag	gaa	tat	cta	cga	tcc	atc	aaa	aaa	caa	ctg	384	
Thr	Arg	Phe	Val	Asp	Glu	Glu	Tyr	Leu	Arg	Ser	Ile	Lys	Lys	Gln	Leu		
		115					120					125					
cat	cct	tct	aag	att	att	tta	att	tct	gat	gtg	aga	tcc	aaa	cga	gga	432	
His	Pro	Ser	Lys	Ile	Ile	Leu	Ile	Ser	Asp	Val	Arg	Ser	Lys	Arg	Gly		
	130					135					140						
gga	aat	gaa	cct	agt	acg	gcg	gat	tta	cta	agt	aat	tac	gct	cta	caa	480	
Gly	Asn	Glu	Pro	Ser	Thr	Ala	Asp	Leu	Leu	Ser	Asn	Tyr	Ala	Leu	Gln		
	145				150					155					160		
aat	gtc	atg	att	agt	att	tta	aac	ccc	gtg	gca	tct	agt	ctt	aaa	tgg	528	
Asn	Val	Met	Ile	Ser	Ile	Leu	Asn	Pro	Val	Ala	Ser	Ser	Leu	Lys	Trp		
				165					170					175			
aga	tgc	ccg	ttt	cca	gat	caa	tgg	atc	aag	gac	ttt	tat	atc	cca	cac	576	
Arg	Cys	Pro	Phe	Pro	Asp	Gln	Trp	Ile	Lys	Asp	Phe	Tyr	Ile	Pro	His		
			180					185					190				
ggg	aat	aaa	atg	tta	caa	cct	ttt	gct	cct	tca	tat	tca	gct	gaa	atg	624	
Gly	Asn	Lys	Met	Leu	Gln	Pro	Phe	Ala	Pro	Ser	Tyr	Ser	Ala	Glu	Met		
	195					200						205					
aga	tta	tta	agt	att	tat	acc	ggg	gag	aac	atg	aga	ctg	act	cga	gtt	672	
Arg	Leu	Leu	Ser	Ile	Tyr	Thr	Gly	Glu	Asn	Met	Arg	Leu	Thr	Arg	Val		
	210					215					220						
acc	aaa	tta	gac	gct	gta	aat	tat	gaa	aaa	aag	atg	tac	tac	ctt	aat	720	
Thr	Lys	Leu	Asp	Ala	Val	Asn	Tyr	Glu	Lys	Lys	Met	Tyr	Tyr	Leu	Asn		
	225				230					235					240		
aag	atc	gtc	cgt	aac	aaa	gta	gtt	gtt	aac	ttt	gat	tat	cct	aat	cag	768	
Lys	Ile	Val	Arg	Asn	Lys	Val	Val	Val	Asn	Phe	Asp	Tyr	Pro	Asn	Gln		
				245					250					255			
gaa	tat	gac	tat	ttt	cac	atg	tac	ttt	atg	ctg	agg	acc	gtg	tac	tgc	816	
Glu	Tyr	Asp	Tyr	Phe	His	Met	Tyr	Phe	Met	Leu	Arg	Thr	Val	Tyr	Cys		
			260					265					270				
aat	aaa	aca	ttt	cct	act	act	aaa	gca	aag	gta	cta	ttt	cta	caa	caa	864	
Asn	Lys	Thr	Phe	Pro	Thr	Thr	Lys	Ala	Lys	Val	Leu	Phe	Leu	Gln	Gln		
		275					280					285					

tct	ata	ttt	cgt	ttc	tta	aat	att	cca	aca	aca	tca	act	gaa	aaa	gtt	912
Ser	Ile	Phe	Arg	Phe	Leu	Asn	Ile	Pro	Thr	Thr	Ser	Thr	Glu	Lys	Val	
	290					295					300					

agt	cat	gaa	cca	ata	caa	cgt	aaa	gta	tct	agc	aaa	gat	ttt	atg	tct	960
Ser	His	Glu	Pro	Ile	Gln	Arg	Lys	Val	Ser	Ser	Lys	Asp	Phe	Met	Ser	
305					310					315					320	

aaa	aac	aga	aat	agc	aag	aga	tcc	gta	cgc	agt	aat	aaa	tag			1002
Lys	Asn	Arg	Asn	Ser	Lys	Arg	Ser	Val	Arg	Ser	Asn	Lys	*			
				325					330							

<210> 208

<211> 333

<212> PRT

<213> vaccinia virus

<400> 208

Met	Asp	Val	Val	Ser	Leu	Asp	Lys	Pro	Phe	Met	Tyr	Phe	Glu	Glu	Ile	
1				5					10					15		
Asp	Asn	Glu	Leu	Asp	Tyr	Glu	Pro	Glu	Ser	Ala	Asn	Glu	Val	Ala	Lys	
		20						25					30			
Lys	Leu	Pro	Tyr	Gln	Gly	Gln	Leu	Lys	Leu	Leu	Leu	Gly	Glu	Leu	Phe	
		35					40						45			
Phe	Leu	Ser	Lys	Leu	Gln	Arg	His	Gly	Ile	Leu	Asp	Gly	Ala	Thr	Val	
	50					55					60					
Val	Tyr	Ile	Gly	Ser	Ala	Pro	Gly	Thr	His	Ile	Arg	Tyr	Leu	Arg	Asp	
65					70					75					80	
His	Phe	Tyr	Asn	Leu	Gly	Val	Ile	Ile	Lys	Trp	Met	Leu	Ile	Asp	Gly	
			85						90					95		
Arg	His	His	Asp	Pro	Ile	Leu	Asn	Gly	Leu	Arg	Asp	Val	Thr	Leu	Val	
			100					105						110		
Thr	Arg	Phe	Val	Asp	Glu	Glu	Tyr	Leu	Arg	Ser	Ile	Lys	Lys	Gln	Leu	
		115					120						125			
His	Pro	Ser	Lys	Ile	Ile	Leu	Ile	Ser	Asp	Val	Arg	Ser	Lys	Arg	Gly	
	130					135					140					
Gly	Asn	Glu	Pro	Ser	Thr	Ala	Asp	Leu	Leu	Ser	Asn	Tyr	Ala	Leu	Gln	
145					150					155					160	
Asn	Val	Met	Ile	Ser	Ile	Leu	Asn	Pro	Val	Ala	Ser	Ser	Leu	Lys	Trp	
			165						170					175		
Arg	Cys	Pro	Phe	Pro	Asp	Gln	Trp	Ile	Lys	Asp	Phe	Tyr	Ile	Pro	His	
			180					185					190			
Gly	Asn	Lys	Met	Leu	Gln	Pro	Phe	Ala	Pro	Ser	Tyr	Ser	Ala	Glu	Met	
	195						200					205				
Arg	Leu	Leu	Ser	Ile	Tyr	Thr	Gly	Glu	Asn	Met	Arg	Leu	Thr	Arg	Val	
	210					215					220					
Thr	Lys	Leu	Asp	Ala	Val	Asn	Tyr	Glu	Lys	Lys	Met	Tyr	Tyr	Leu	Asn	
225					230						235				240	
Lys	Ile	Val	Arg	Asn	Lys	Val	Val	Val	Asn	Phe	Asp	Tyr	Pro	Asn	Gln	
				245					250					255		
Glu	Tyr	Asp	Tyr	Phe	His	Met	Tyr	Phe	Met	Leu	Arg	Thr	Val	Tyr	Cys	
		260						265					270			
Asn	Lys	Thr	Phe	Pro	Thr	Thr	Lys	Ala	Lys	Val	Leu	Phe	Leu	Gln	Gln	
	275						280					285				
Ser	Ile	Phe	Arg	Phe	Leu	Asn	Ile	Pro	Thr	Thr	Ser	Thr	Glu	Lys	Val	
	290					295					300					
Ser	His	Glu	Pro	Ile	Gln	Arg	Lys	Val	Ser	Ser	Lys	Asp	Phe	Met	Ser	

305 310 315 320
Lys Asn Arg Asn Ser Lys Arg Ser Val Arg Ser Asn Lys
 325 330

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<210> 209
<211> 558
<212> DNA
<213> vaccinia virus
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<220>  
<221> CDS  
<222> (1) ... (558)
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<400> 209																
atg	aac	caa	tac	aac	gta	aag	tat	cta	gca	aag	att	tta	tgt	cta	aaa	48
Met	Asn	Gln	Tyr	Asn	Val	Lys	Tyr	Leu	Ala	Lys	Ile	Leu	Cys	Leu	Lys	
1				5					10					15		
aca	gaa	ata	gca	aga	gat	ccg	tac	gca	gta	ata	aat	aga	aac	gta	cta	96
Thr	Glu	Ile	Ala	Arg	Asp	Pro	Tyr	Ala	Val	Ile	Asn	Arg	Asn	Val	Leu	
			20					25					30			
ctg	aga	tat	act	acc	gat	ata	gag	tat	aat	gat	tta	gtt	act	tta	ata	144
Leu	Arg	Tyr	Thr	Thr	Asp	Ile	Glu	Tyr	Asn	Asp	Leu	Val	Thr	Leu	Ile	
		35					40					45				
acc	gtt	aga	cat	aaa	att	gat	tct	atg	aaa	act	gtg	ttt	cag	gta	ttt	192
Thr	Val	Arg	His	Lys	Ile	Asp	Ser	Met	Lys	Thr	Val	Phe	Gln	Val	Phe	
	50					55					60					
aac	gaa	tca	tcc	ata	aat	tat	act	ccg	gtt	gat	gat	gat	tat	gga	gaa	240
Asn	Glu	Ser	Ser	Ile	Asn	Tyr	Thr	Pro	Val	Asp	Asp	Asp	Tyr	Gly	Glu	
65					70					75					80	
cca	atc	att	ata	aca	tcg	tat	ctt	caa	aaa	ggg	cat	aac	aag	ttt	cct	288
Pro	Ile	Ile	Ile	Thr	Ser	Tyr	Leu	Gln	Lys	Gly	His	Asn	Lys	Phe	Pro	
				85					90					95		
gta	aat	ttt	cta	tac	ata	gat	gtg	gta	ata	tct	gac	tta	ttt	cct	agc	336
Val	Asn	Phe	Leu	Tyr	Ile	Asp	Val	Val	Ile	Ser	Asp	Leu	Phe	Pro	Ser	
			100					105					110			
ttt	gtt	aga	cta	gat	act	aca	gaa	act	aat	ata	gtt	aat	agt	gta	cta	384
Phe	Val	Arg	Leu	Asp	Thr	Thr	Glu	Thr	Asn	Ile	Val	Asn	Ser	Val	Leu	
		115					120					125				
caa	aca	ggg	gat	ggg	aaa	aag	act	ctt	cgt	ctt	ccc	aaa	atg	tta	gag	432
Gln	Thr	Gly	Asp	Gly	Lys	Lys	Thr	Leu	Arg	Leu	Pro	Lys	Met	Leu	Glu	
	130					135					140					
acg	gaa	ata	gtt	gtc	aag	att	ctc	tat	cgc	cct	aat	ata	cca	tta	aaa	480
Thr	Glu	Ile	Val	Val	Lys	Ile	Leu	Tyr	Arg	Pro	Asn	Ile	Pro	Leu	Lys	
145					150					155					160	
att	gtt	aga	ttt	ttc	cgc	aat	aac	atg	gta	act	gga	gta	gag	ata	gcc	528
Ile	Val	Arg	Phe	Phe	Arg	Asn	Asn	Met	Val	Thr	Gly	Val	Glu	Ile	Ala	
				165					170					175		

gat aga tct gtt att tca gtc gct gat taa
 Asp Arg Ser Val Ile Ser Val Ala Asp *
 180 185

558

<210> 210
 <211> 185
 <212> PRT
 <213> vaccinia virus

<400> 210
 Met Asn Gln Tyr Asn Val Lys Tyr Leu Ala Lys Ile Leu Cys Leu Lys
 1 5 10 15
 Thr Glu Ile Ala Arg Asp Pro Tyr Ala Val Ile Asn Arg Asn Val Leu
 20 25 30
 Leu Arg Tyr Thr Thr Asp Ile Glu Tyr Asn Asp Leu Val Thr Leu Ile
 35 40 45
 Thr Val Arg His Lys Ile Asp Ser Met Lys Thr Val Phe Gln Val Phe
 50 55 60
 Asn Glu Ser Ser Ile Asn Tyr Thr Pro Val Asp Asp Asp Tyr Gly Glu
 65 70 75 80
 Pro Ile Ile Ile Thr Ser Tyr Leu Gln Lys Gly His Asn Lys Phe Pro
 85 90 95
 Val Asn Phe Leu Tyr Ile Asp Val Val Ile Ser Asp Leu Phe Pro Ser
 100 105 110
 Phe Val Arg Leu Asp Thr Thr Glu Thr Asn Ile Val Asn Ser Val Leu
 115 120 125
 Gln Thr Gly Asp Gly Lys Lys Thr Leu Arg Leu Pro Lys Met Leu Glu
 130 135 140
 Thr Glu Ile Val Val Lys Ile Leu Tyr Arg Pro Asn Ile Pro Leu Lys
 145 150 155 160
 Ile Val Arg Phe Phe Arg Asn Asn Met Val Thr Gly Val Glu Ile Ala
 165 170 175
 Asp Arg Ser Val Ile Ser Val Ala Asp
 180 185

<210> 211
 <211> 399
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(399)

<400> 211
 atg acg gac gaa caa att tat gca ttc tgt gat gct aac aaa gac gat 48
 Met Thr Asp Glu Gln Ile Tyr Ala Phe Cys Asp Ala Asn Lys Asp Asp
 1 5 10 15
 ata cga tgt aaa tgt att tat cct gat aaa agc ata gta cgg ata gga 96
 Ile Arg Cys Lys Cys Ile Tyr Pro Asp Lys Ser Ile Val Arg Ile Gly
 20 25 30
 ata gat aca aga tta ccc tat tat tgt tgg tac gag cca tgt aaa cga 144
 Ile Asp Thr Arg Leu Pro Tyr Tyr Cys Trp Tyr Glu Pro Cys Lys Arg
 35 40 45

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agc gat gcg ttg tta cca gcc tct tta aaa aaa aat ata aca aaa tgc 192
Ser Asp Ala Leu Leu Pro Ala Ser Leu Lys Lys Asn Ile Thr Lys Cys
    50                55                60

aat gta tcg gat tgt acc att tca ttg gga aac gtt tcc att aca gat 240
Asn Val Ser Asp Cys Thr Ile Ser Leu Gly Asn Val Ser Ile Thr Asp
    65                70                75                80

agt aaa tta gat gta aat aat gtt tgt gat tcc aaa cga gta gct acc 288
Ser Lys Leu Asp Val Asn Asn Val Cys Asp Ser Lys Arg Val Ala Thr
                85                90                95

gag aat ata gct gtc cgc tat ctg aat cag gaa att aga tac cct att 336
Glu Asn Ile Ala Val Arg Tyr Leu Asn Gln Glu Ile Arg Tyr Pro Ile
                100                105                110

ata gat atc aaa tgg ctt ccg att gga tta cta gcg tta gct att tta 384
Ile Asp Ile Lys Trp Leu Pro Ile Gly Leu Leu Ala Leu Ala Ile Leu
                115                120                125

ata tta gca ttt ttc
Ile Leu Ala Phe Phe
    130

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<210> 212
<211> 133
<212> PRT
<213> vaccinia virus

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<400> 212
Met Thr Asp Glu Gln Ile Tyr Ala Phe Cys Asp Ala Asn Lys Asp Asp
 1          5          10          15
Ile Arg Cys Lys Cys Ile Tyr Pro Asp Lys Ser Ile Val Arg Ile Gly
 20          25          30
Ile Asp Thr Arg Leu Pro Tyr Tyr Cys Trp Tyr Glu Pro Cys Lys Arg
 35          40          45
Ser Asp Ala Leu Leu Pro Ala Ser Leu Lys Lys Asn Ile Thr Lys Cys
 50          55          60
Asn Val Ser Asp Cys Thr Ile Ser Leu Gly Asn Val Ser Ile Thr Asp
 65          70          75          80
Ser Lys Leu Asp Val Asn Asn Val Cys Asp Ser Lys Arg Val Ala Thr
 85          90          95
Glu Asn Ile Ala Val Arg Tyr Leu Asn Gln Glu Ile Arg Tyr Pro Ile
100          105          110
Ile Asp Ile Lys Trp Leu Pro Ile Gly Leu Leu Ala Leu Ala Ile Leu
115          120          125
Ile Leu Ala Phe Phe
130

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<210> 213
<211> 3861
<212> DNA
<213> vaccinia virus

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<220>
<221> CDS
<222> (1)...(3861)

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<400> 213

atg gct gta atc tct aag gtt acg tat agt cta tat gat caa aaa gag	48
Met Ala Val Ile Ser Lys Val Thr Tyr Ser Leu Tyr Asp Gln Lys Glu	
1 5 10 15	
att aat gct aca gat att atc att agt cat gtt aaa aat gac gac gat	96
Ile Asn Ala Thr Asp Ile Ile Ile Ser His Val Lys Asn Asp Asp Asp	
20 25 30	
atc ggt acc gtt aaa gat ggt aga cta ggt gct atg gat ggg gca tta	144
Ile Gly Thr Val Lys Asp Gly Arg Leu Gly Ala Met Asp Gly Ala Leu	
35 40 45	
tgt aag act tgt ggg aaa acg gaa ttg gaa tgt ttc ggt cac tgg ggt	192
Cys Lys Thr Cys Gly Lys Thr Glu Leu Glu Cys Phe Gly His Trp Gly	
50 55 60	
aaa gta agt att tat aaa act cat ata gtt aag cct gaa ttt att tca	240
Lys Val Ser Ile Tyr Lys Thr His Ile Val Lys Pro Glu Phe Ile Ser	
65 70 75 80	
gaa att att cgt tta ctg aat cat ata tgt att cac tgc gga tta ttg	288
Glu Ile Ile Arg Leu Leu Asn His Ile Cys Ile His Cys Gly Leu Leu	
85 90 95	
cgt tca cga gaa ccg tat tcc gac gat att aac cta aaa gag tta tcg	336
Arg Ser Arg Glu Pro Tyr Ser Asp Asp Ile Asn Leu Lys Glu Leu Ser	
100 105 110	
gga cac gct ctt agg aga tta aag gat aaa ata tta tcc aag aaa aag	384
Gly His Ala Leu Arg Arg Leu Lys Asp Lys Ile Leu Ser Lys Lys Lys	
115 120 125	
tca tgt tgg aac agt gaa tgt atg caa ccg tat caa aaa att act ttt	432
Ser Cys Trp Asn Ser Glu Cys Met Gln Pro Tyr Gln Lys Ile Thr Phe	
130 135 140	
tca aag aaa aag gtt tgt ttc gtc aac aag ttg gat gat att aac gtt	480
Ser Lys Lys Lys Val Cys Phe Val Asn Lys Leu Asp Asp Ile Asn Val	
145 150 155 160	
cct aat tct ctc atc tat caa aag tta att tct att cat gaa aag ttt	528
Pro Asn Ser Leu Ile Tyr Gln Lys Leu Ile Ser Ile His Glu Lys Phe	
165 170 175	
tgg cca tta tta gaa att cat caa tat cca gct aac tta ttt tat aca	576
Trp Pro Leu Leu Glu Ile His Gln Tyr Pro Ala Asn Leu Phe Tyr Thr	
180 185 190	
gac tac ttt ccc atc cct ccg ttg att att aga ccg gct att agt ttt	624
Asp Tyr Phe Pro Ile Pro Pro Leu Ile Ile Arg Pro Ala Ile Ser Phe	
195 200 205	
tgg ata gat agt ata ccc aaa gaa acc aat gaa tta act tac tta tta	672
Trp Ile Asp Ser Ile Pro Lys Glu Thr Asn Glu Leu Thr Tyr Leu Leu	
210 215 220	
ggt atg atc gtt aag aat tgt aac ttg aat gct gat gaa cag gtt atc	720
Gly Met Ile Val Lys Asn Cys Asn Leu Asn Ala Asp Glu Gln Val Ile	

225	230	235	240	
cag aag gcg gta ata gaa tac gat gat att aaa att att tct aat aac				768
Gln Lys Ala Val Ile Glu Tyr Asp Asp Ile Lys Ile Ile Ser Asn Asn	245	250	255	
act acc agt att aat tta tca tat atc aca tcc ggc aaa aat aat atg				816
Thr Thr Ser Ile Asn Leu Ser Tyr Ile Thr Ser Gly Lys Asn Asn Met	260	265	270	
att aga agt tat atc gtc gcc cgg cga aaa gat cag acc gct aga tct				864
Ile Arg Ser Tyr Ile Val Ala Arg Arg Lys Asp Gln Thr Ala Arg Ser	275	280	285	
gta att ggt ccc agt aca tct atc acc gtt aat gag gta gga atg ccc				912
Val Ile Gly Pro Ser Thr Ser Ile Thr Val Asn Glu Val Gly Met Pro	290	295	300	
gca tat att aga aat aca ctt aca gaa aag ata ttt gtt aat gcc ttt				960
Ala Tyr Ile Arg Asn Thr Leu Thr Glu Lys Ile Phe Val Asn Ala Phe	305	310	315	320
aca gtg gat aaa gtt aaa caa cta tta gca tca aac caa gtt aaa ttt				1008
Thr Val Asp Lys Val Lys Gln Leu Leu Ala Ser Asn Gln Val Lys Phe	325	330	335	
tac ttt aat aaa cga tta aac caa tta aca aga ata cgc caa gga aag				1056
Tyr Phe Asn Lys Arg Leu Asn Gln Leu Thr Arg Ile Arg Gln Gly Lys	340	345	350	
ttt att aaa aat aaa ata cat tta ttg cct ggt gat tgg gta gaa gta				1104
Phe Ile Lys Asn Lys Ile His Leu Leu Pro Gly Asp Trp Val Glu Val	355	360	365	
gct gtt caa gaa tat aca agt att att ttt gga aga cag ccg tct cta				1152
Ala Val Gln Glu Tyr Thr Ser Ile Ile Phe Gly Arg Gln Pro Ser Leu	370	375	380	
cat aga tac aac gtc atc gct tca tct atc aga gct acc gaa gga gat				1200
His Arg Tyr Asn Val Ile Ala Ser Ser Ile Arg Ala Thr Glu Gly Asp	385	390	395	400
act atc aaa ata tct ccc gga att gcc aac tct caa aat gct gat ttc				1248
Thr Ile Lys Ile Ser Pro Gly Ile Ala Asn Ser Gln Asn Ala Asp Phe	405	410	415	
gac ggg gat gag gaa tgg atg ata tta gaa caa aat cct aaa gct gta				1296
Asp Gly Asp Glu Glu Trp Met Ile Leu Glu Gln Asn Pro Lys Ala Val	420	425	430	
att gaa caa agt att ctt atg tat ccg acg acg tta ctc aaa cac gat				1344
Ile Glu Gln Ser Ile Leu Met Tyr Pro Thr Thr Leu Leu Lys His Asp	435	440	445	
att cat gga gcc cct gtt tat gga tct att caa gat gaa atc gta gca				1392
Ile His Gly Ala Pro Val Tyr Gly Ser Ile Gln Asp Glu Ile Val Ala	450	455	460	
gcg tat tca ttg ttt agg ata caa gat ctt tgt tta gat gaa gta ttg				1440

Ala Tyr Ser Leu Phe Arg Ile Gln Asp Leu Cys Leu Asp Glu Val Leu 465 470 475 480	
aac atc ttg ggg aaa tat gga aga gag ttc gat cct aaa ggt aaa tgt Asn Ile Leu Gly Lys Tyr Gly Arg Glu Phe Asp Pro Lys Gly Lys Cys 485 490 495	1488
aaa ttc agc ggt aaa gat atc tat act tac ttg ata ggt gaa aag att Lys Phe Ser Gly Lys Asp Ile Tyr Thr Tyr Leu Ile Gly Lys Ile 500 505 510	1536
aat tat ccg ggt ctc tta aag gat ggt gaa att att gca aac gac gta Asn Tyr Pro Gly Leu Leu Lys Asp Gly Glu Ile Ile Ala Asn Asp Val 515 520 525	1584
gat agt aat ttt gtt gtg gct atg agg cat ctg tca ttg gct gga ctc Asp Ser Asn Phe Val Val Ala Met Arg His Leu Ser Leu Ala Gly Leu 530 535 540	1632
tta tcc gat cat aag tcg aac gtg gaa ggt atc aac ttt att atc aag Leu Ser Asp His Lys Ser Asn Val Glu Gly Ile Asn Phe Ile Ile Lys 545 550 555 560	1680
tca tct tat gtt ttt aag aga tat cta tct att tac ggt ttt ggg gtg Ser Ser Tyr Val Phe Lys Arg Tyr Leu Ser Ile Tyr Gly Phe Gly Val 565 570 575	1728
aca ttc aaa gat ctg aga cca aat tcg acg ttc act aat aaa ttg gag Thr Phe Lys Asp Leu Arg Pro Asn Ser Thr Phe Thr Asn Lys Leu Glu 580 585 590	1776
gcc atc aac gta gaa aaa ata gaa ctt atc aaa gaa gca tac gcc aaa Ala Ile Asn Val Glu Lys Ile Glu Leu Ile Lys Glu Ala Tyr Ala Lys 595 600 605	1824
tat ctc aac gat gta aga gac ggg aaa ata gtt cca tta tct aaa gct Tyr Leu Asn Asp Val Arg Asp Gly Lys Ile Val Pro Leu Ser Lys Ala 610 615 620	1872
tta gag gcg gac tat gtg gaa tcc atg tta tcc aac ttg aca aat ctt Leu Glu Ala Asp Tyr Val Glu Ser Met Leu Ser Asn Leu Thr Asn Leu 625 630 635 640	1920
aat atc cga gag ata gaa gaa cat atg aga caa acg ctg ata gat gat Asn Ile Arg Glu Ile Glu Glu His Met Arg Gln Thr Leu Ile Asp Asp 645 650 655	1968
cca gat aat aac ctc ctg aaa atg gcc aaa gcg ggt tat aaa gta aat Pro Asp Asn Asn Leu Leu Lys Met Ala Lys Ala Gly Tyr Lys Val Asn 660 665 670	2016
ccc aca gaa cta atg tat att cta ggt act tat gga caa cag agg att Pro Thr Glu Leu Met Tyr Ile Leu Gly Thr Tyr Gly Gln Gln Arg Ile 675 680 685	2064
gat ggt gaa cca gca gag act cga gta ttg ggt aga gtt tta cct tac Asp Gly Glu Pro Ala Glu Thr Arg Val Leu Gly Arg Val Leu Pro Tyr 690 695 700	2112

tat ctt cca gac tct aag gat cca gaa gga aga ggt tat att ctt aat	2160
Tyr Leu Pro Asp Ser Lys Asp Pro Glu Gly Arg Gly Tyr Ile Leu Asn	
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tct tta aca aaa gga tta aca ggt tct caa tat tac ttt tcg atg ctg	2208
Ser Leu Thr Lys Gly Leu Thr Gly Ser Gln Tyr Tyr Phe Ser Met Leu	
725 730 735	
gtt gca aga tct caa tct act gat atc gtc tgt gaa aca tca cgt acc	2256
Val Ala Arg Ser Gln Ser Thr Asp Ile Val Cys Glu Thr Ser Arg Thr	
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gga aca ctg gct aga aaa atc att aaa aag atg gag gat atg gtg gtc	2304
Gly Thr Leu Ala Arg Lys Ile Ile Lys Lys Met Glu Asp Met Val Val	
755 760 765	
gac gga tac gga caa gta gtt ata ggt aat acg ctc atc aag tac gcc	2352
Asp Gly Tyr Gly Gln Val Val Ile Gly Asn Thr Leu Ile Lys Tyr Ala	
770 775 780	
gcc aat tat acc aaa att cta ggc tca gta tgt aaa cct gta gat ctt	2400
Ala Asn Tyr Thr Lys Ile Leu Gly Ser Val Cys Lys Pro Val Asp Leu	
785 790 795 800	
atc tat cca gat gag tcc atg act tgg tat ttg gaa att agt gct ctg	2448
Ile Tyr Pro Asp Glu Ser Met Thr Trp Tyr Leu Glu Ile Ser Ala Leu	
805 810 815	
tgg aat aaa ata aaa cag gga ttc gtt tac tct cag aaa cag aaa ctt	2496
Trp Asn Lys Ile Lys Gln Gly Phe Val Tyr Ser Gln Lys Gln Lys Leu	
820 825 830	
gca aaa aag aca ttg gcg ccg ttt aat ttc cta gta ttc gtc aaa ccc	2544
Ala Lys Lys Thr Leu Ala Pro Phe Asn Phe Leu Val Phe Val Lys Pro	
835 840 845	
acc act gag gat aat gct att aag gtt aag gat ctg tac gat atg att	2592
Thr Thr Glu Asp Asn Ala Ile Lys Val Lys Asp Leu Tyr Asp Met Ile	
850 855 860	
cat aac gtc att gat gat gtg aga gag aaa tac ttc ttt acg gta tct	2640
His Asn Val Ile Asp Asp Val Arg Glu Lys Tyr Phe Phe Thr Val Ser	
865 870 875 880	
aat ata gat ttt atg gag tat ata ttc ttg acg cat ctt aat cct tct	2688
Asn Ile Asp Phe Met Glu Tyr Ile Phe Leu Thr His Leu Asn Pro Ser	
885 890 895	
aga att aga att aca aaa gaa acg gct atc act atc ttt gaa aag ttc	2736
Arg Ile Arg Ile Thr Lys Glu Thr Ala Ile Thr Ile Phe Glu Lys Phe	
900 905 910	
tat gaa aaa ctc aat tat act cta ggt ggt gga act cct att gga att	2784
Tyr Glu Lys Leu Asn Tyr Thr Leu Gly Gly Gly Thr Pro Ile Gly Ile	
915 920 925	
att tct gca cag gta ttg tct gag aag ttt aca caa caa gcc ctg tcc	2832
Ile Ser Ala Gln Val Leu Ser Glu Lys Phe Thr Gln Gln Ala Leu Ser	
930 935 940	

agt ttt cac act act gaa aaa agt ggt gcc gtc aaa caa aaa ctt ggt	2880
Ser Phe His Thr Thr Glu Lys Ser Gly Ala Val Lys Gln Lys Leu Gly	
945 950 955 960	
ttc aac gag ttt aat aac ttg act aat ttg agt aag aat aag acc gaa	2928
Phe Asn Glu Phe Asn Asn Leu Thr Asn Leu Ser Lys Asn Lys Thr Glu	
965 970 975	
att atc act ctg gta tcc gat gat atc tct aaa ctt caa tct gtt aag	2976
Ile Ile Thr Leu Val Ser Asp Asp Ile Ser Lys Leu Gln Ser Val Lys	
980 985 990	
att aat ttc gaa ttt gta tgt ttg gga gaa tta aat cca aac atc act	3024
Ile Asn Phe Glu Phe Val Cys Leu Gly Glu Leu Asn Pro Asn Ile Thr	
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Leu Arg Lys Glu Thr Asp Lys Tyr Val Val Asp Ile Ile Val Asn Arg	
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tta tac atc aag aga gca gaa ata acc gaa tta gtt gtc gaa tat atg	3120
Leu Tyr Ile Lys Arg Ala Glu Ile Thr Glu Leu Val Val Glu Tyr Met	
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Glu Thr Phe Ile Glu Asp Glu Asp Asn Ile Arg Phe Thr Val Tyr Leu	
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aat ttc gtt gaa cca gag gaa ttg aat ctt agt aag ttt atg atg gtt	3264
Asn Phe Val Glu Pro Glu Glu Leu Asn Leu Ser Lys Phe Met Met Val	
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Leu Pro Gly Ala Ala Asn Lys Gly Lys Ile Ser Lys Phe Lys Ile Pro	
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Asn Lys Met Thr Val Glu Leu Met Asn Leu Lys Glu Leu Gly Ser Phe	
1125 1130 1135	
gat ttg gaa aac gtc aac gtg tat cct gga gta tgg aat aca tac gat	3456
Asp Leu Glu Asn Val Asn Val Tyr Pro Gly Val Trp Asn Thr Tyr Asp	
1140 1145 1150	
atc ttc ggt atc gag gcc gct cgt gaa tac ttg tgc gaa gcc atg tta	3504
Ile Phe Gly Ile Glu Ala Ala Arg Glu Tyr Leu Cys Glu Ala Met Leu	
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aac acc tat gga gaa ggg ttc gat tat ctg tat cag cct tgt gat ctt	3552
Asn Thr Tyr Gly Glu Gly Phe Asp Tyr Leu Tyr Gln Pro Cys Asp Leu	

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ctc gct agt tta cta tgt gct agt tac gaa cca gaa tca gtg aat aaa			3600
Leu Ala Ser Leu Leu Cys Ala Ser Tyr Glu Pro Glu Ser Val Asn Lys			
1185	1190	1195	1200
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Phe Lys Phe Gly Ala Ala Ser Thr Leu Lys Arg Ala Thr Phe Gly Asp			
	1205	1210	1215
aat aaa gca ttg tta aac gcg gct ctt cat aaa aag tca gaa cct att			3696
Asn Lys Ala Leu Leu Asn Ala Ala Leu His Lys Lys Ser Glu Pro Ile			
	1220	1225	1230
aac gat aat agt agc tgc cac ttt ttt agc aag gtc cct aat ata gga			3744
Asn Asp Asn Ser Ser Cys His Phe Phe Ser Ser Lys Val Pro Asn Ile Gly			
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act gga tat tac aaa tac ttt atc gac ttg ggt ctt ctc atg aga atg			3792
Thr Gly Tyr Tyr Lys Tyr Phe Ile Asp Leu Gly Leu Leu Met Arg Met			
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Glu Arg Lys Leu Ser Asp Lys Ile Ser Ser Gln Lys Ile Lys Glu Met			
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Glu Glu Thr Glu Asp Phe *			
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<400> 214

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Ile	Gly	Thr	Val	Lys	Asp	Gly	Arg	Leu	Gly	Ala	Met	Asp	Gly	Ala	Leu
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Cys	Lys	Thr	Cys	Gly	Lys	Thr	Glu	Leu	Glu	Cys	Phe	Gly	His	Trp	Gly
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Lys	Val	Ser	Ile	Tyr	Lys	Thr	His	Ile	Val	Lys	Pro	Glu	Phe	Ile	Ser
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Glu	Ile	Ile	Arg	Leu	Leu	Asn	His	Ile	Cys	Ile	His	Cys	Gly	Leu	Leu
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Arg	Ser	Arg	Glu	Pro	Tyr	Ser	Asp	Asp	Ile	Asn	Leu	Lys	Glu	Leu	Ser
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Gly	His	Ala	Leu	Arg	Arg	Leu	Lys	Asp	Lys	Ile	Leu	Ser	Lys	Lys	Lys
		115				120						125			
Ser	Cys	Trp	Asn	Ser	Glu	Cys	Met	Gln	Pro	Tyr	Gln	Lys	Ile	Thr	Phe
	130				135						140				
Ser	Lys	Lys	Lys	Val	Cys	Phe	Val	Asn	Lys	Leu	Asp	Asp	Ile	Asn	Val
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Pro	Asn	Ser	Leu	Ile	Tyr	Gln	Lys	Leu	Ile	Ser	Ile	His	Glu	Lys	Phe
			165						170					175	

Trp	Pro	Leu	Leu	Glu	Ile	His	Gln	Tyr	Pro	Ala	Asn	Leu	Phe	Tyr	Thr
			180					185					190		
Asp	Tyr	Phe	Pro	Ile	Pro	Pro	Leu	Ile	Ile	Arg	Pro	Ala	Ile	Ser	Phe
		195					200					205			
Trp	Ile	Asp	Ser	Ile	Pro	Lys	Glu	Thr	Asn	Glu	Leu	Thr	Tyr	Leu	Leu
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Gly	Met	Ile	Val	Lys	Asn	Cys	Asn	Leu	Asn	Ala	Asp	Glu	Gln	Val	Ile
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Gln	Lys	Ala	Val	Ile	Glu	Tyr	Asp	Asp	Ile	Lys	Ile	Ile	Ser	Asn	Asn
			245						250					255	
Thr	Thr	Ser	Ile	Asn	Leu	Ser	Tyr	Ile	Thr	Ser	Gly	Lys	Asn	Asn	Met
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Ile	Arg	Ser	Tyr	Ile	Val	Ala	Arg	Arg	Lys	Asp	Gln	Thr	Ala	Arg	Ser
		275					280					285			
Val	Ile	Gly	Pro	Ser	Thr	Ser	Ile	Thr	Val	Asn	Glu	Val	Gly	Met	Pro
	290					295					300				
Ala	Tyr	Ile	Arg	Asn	Thr	Leu	Thr	Glu	Lys	Ile	Phe	Val	Asn	Ala	Phe
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Thr	Val	Asp	Lys	Val	Lys	Gln	Leu	Leu	Ala	Ser	Asn	Gln	Val	Lys	Phe
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Tyr	Phe	Asn	Lys	Arg	Leu	Asn	Gln	Leu	Thr	Arg	Ile	Arg	Gln	Gly	Lys
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Phe	Ile	Lys	Asn	Lys	Ile	His	Leu	Leu	Pro	Gly	Asp	Trp	Val	Glu	Val
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Ala	Val	Gln	Glu	Tyr	Thr	Ser	Ile	Ile	Phe	Gly	Arg	Gln	Pro	Ser	Leu
	370					375					380				
His	Arg	Tyr	Asn	Val	Ile	Ala	Ser	Ser	Ile	Arg	Ala	Thr	Glu	Gly	Asp
385				390						395					400
Thr	Ile	Lys	Ile	Ser	Pro	Gly	Ile	Ala	Asn	Ser	Gln	Asn	Ala	Asp	Phe
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Asp	Gly	Asp	Glu	Glu	Trp	Met	Ile	Leu	Glu	Gln	Asn	Pro	Lys	Ala	Val
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Ile	Glu	Gln	Ser	Ile	Leu	Met	Tyr	Pro	Thr	Thr	Leu	Leu	Lys	His	Asp
		435					440					445			
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	450					455					460				
Ala	Tyr	Ser	Leu	Phe	Arg	Ile	Gln	Asp	Leu	Cys	Leu	Asp	Glu	Val	Leu
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Asn	Ile	Leu	Gly	Lys	Tyr	Gly	Arg	Glu	Phe	Asp	Pro	Lys	Gly	Lys	Cys
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Lys	Phe	Ser	Gly	Lys	Asp	Ile	Tyr	Thr	Tyr	Leu	Ile	Gly	Glu	Lys	Ile
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Ser	Ser	Tyr	Val	Phe	Lys	Arg	Tyr	Leu	Ser	Ile	Tyr	Gly	Phe	Gly	Val
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Thr	Phe	Lys	Asp	Leu	Arg	Pro	Asn	Ser	Thr	Phe	Thr	Asn	Lys	Leu	Glu
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Ala	Ile	Asn	Val	Glu	Lys	Ile	Glu	Leu	Ile	Lys	Glu	Ala	Tyr	Ala	Lys
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Tyr	Leu	Asn	Asp	Val	Arg	Asp	Gly	Lys	Ile	Val	Pro	Leu	Ser	Lys	Ala
	610					615					620				
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625				630						635					640
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Pro	Thr	Glu	Leu	Met	Tyr	Ile	Leu	Gly	Thr	Tyr	Gly	Gln	Gln	Arg	Ile	
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Asp	Gly	Glu	Pro	Ala	Glu	Thr	Arg	Val	Leu	Gly	Arg	Val	Leu	Pro	Tyr	
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Ser	Leu	Thr	Lys	Gly	Leu	Thr	Gly	Ser	Gln	Tyr	Tyr	Phe	Ser	Met	Leu	
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Val	Ala	Arg	Ser	Gln	Ser	Thr	Asp	Ile	Val	Cys	Glu	Thr	Ser	Arg	Thr	
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	770				775						780					
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785					790					795					800	
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Ala	Lys	Lys	Thr	Leu	Ala	Pro	Phe	Asn	Phe	Leu	Val	Phe	Val	Lys	Pro	
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Thr	Thr	Glu	Asp	Asn	Ala	Ile	Lys	Val	Lys	Asp	Leu	Tyr	Asp	Met	Ile	
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Ser	Phe	His	Thr	Thr	Glu	Lys	Ser	Gly	Ala	Val	Lys	Gln	Lys	Leu	Gly	
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 Ile Phe Gly Ile Glu Ala Ala Arg Glu Tyr Leu Cys Glu Ala Met Leu
 1155 1160 1165
 Asn Thr Tyr Gly Glu Gly Phe Asp Tyr Leu Tyr Gln Pro Cys Asp Leu
 1170 1175 1180
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 1185 1190 1195 1200
 Phe Lys Phe Gly Ala Ala Ser Thr Leu Lys Arg Ala Thr Phe Gly Asp
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 Asp Met His Arg Ala Lys Ser Pro Thr Ile Met Thr Arg Val Thr Asn
 20 25 30

 aat gtg tat ttg gga aat tat aaa aat gct atg gat gca cca tca tct 144
 Asn Val Tyr Leu Gly Asn Tyr Lys Asn Ala Met Asp Ala Pro Ser Ser
 35 40 45

 gaa gtt aag ttc aaa tat gtt tta aat ttg acg atg gat aaa tat aca 192
 Glu Val Lys Phe Lys Tyr Val Leu Asn Leu Thr Met Asp Lys Tyr Thr
 50 55 60

 tta cct aac tct aat att aat att att cat ata ccg ttg gta gat gat 240
 Leu Pro Asn Ser Asn Ile Asn Ile Ile His Ile Pro Leu Val Asp Asp
 65 70 75 80

 aca act acc gat att agt aaa tat ttt gac gac gta acc gcc ttt tta 288
 Thr Thr Thr Asp Ile Ser Lys Tyr Phe Asp Asp Val Thr Ala Phe Leu
 85 90 95

 tct aaa tgt gat caa cga aac gag ccc gtg ttg gtt cat tgt gct gcg 336

Ser	Lys	Cys	Asp	Gln	Arg	Asn	Glu	Pro	Val	Leu	Val	His	Cys	Ala	Ala		
			100					105					110				
gga	gta	aat	aga	agc	ggg	gct	atg	att	ttg	gca	tat	cta	atg	tct	aaa	384	
Gly	Val	Asn	Arg	Ser	Gly	Ala	Met	Ile	Leu	Ala	Tyr	Leu	Met	Ser	Lys		
		115					120					125					
aat	aag	gag	tca	ttg	cct	atg	cta	tat	ttt	tta	tac	gtg	tat	cat	tct	432	
Asn	Lys	Glu	Ser	Leu	Pro	Met	Leu	Tyr	Phe	Leu	Tyr	Val	Tyr	His	Ser		
	130					135					140						
atg	agg	gac	ttg	aga	ggc	gca	ttt	gtg	gaa	aat	cca	tcg	ttt	aaa	aga	480	
Met	Arg	Asp	Leu	Arg	Gly	Ala	Phe	Val	Glu	Asn	Pro	Ser	Phe	Lys	Arg		
145					150				155						160		
cag	atc	ata	gaa	aaa	tat	gtt	att	gat	aag	aat						513	
Gln	Ile	Ile	Glu	Lys	Tyr	Val	Ile	Asp	Lys	Asn							
			165						170								

<210> 216
 <211> 171
 <212> PRT
 <213> vaccinia virus

<400>	216																
Met	Asp	Lys	Lys	Ser	Leu	Tyr	Lys	Tyr	Leu	Leu	Leu	Arg	Ser	Thr	Gly		
1				5					10					15			
Asp	Met	His	Arg	Ala	Lys	Ser	Pro	Thr	Ile	Met	Thr	Arg	Val	Thr	Asn		
			20					25					30				
Asn	Val	Tyr	Leu	Gly	Asn	Tyr	Lys	Asn	Ala	Met	Asp	Ala	Pro	Ser	Ser		
		35					40					45					
Glu	Val	Lys	Phe	Lys	Tyr	Val	Leu	Asn	Leu	Thr	Met	Asp	Lys	Tyr	Thr		
	50					55					60						
Leu	Pro	Asn	Ser	Asn	Ile	Asn	Ile	Ile	His	Ile	Pro	Leu	Val	Asp	Asp		
65				70					75					80			
Thr	Thr	Thr	Asp	Ile	Ser	Lys	Tyr	Phe	Asp	Asp	Val	Thr	Ala	Phe	Leu		
			85					90						95			
Ser	Lys	Cys	Asp	Gln	Arg	Asn	Glu	Pro	Val	Leu	Val	His	Cys	Ala	Ala		
			100					105					110				
Gly	Val	Asn	Arg	Ser	Gly	Ala	Met	Ile	Leu	Ala	Tyr	Leu	Met	Ser	Lys		
		115					120					125					
Asn	Lys	Glu	Ser	Leu	Pro	Met	Leu	Tyr	Phe	Leu	Tyr	Val	Tyr	His	Ser		
	130					135					140						
Met	Arg	Asp	Leu	Arg	Gly	Ala	Phe	Val	Glu	Asn	Pro	Ser	Phe	Lys	Arg		
145					150				155						160		
Gln	Ile	Ile	Glu	Lys	Tyr	Val	Ile	Asp	Lys	Asn							
			165						170								

<210> 217
 <211> 570
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(570)

<400> 217

atg gat aaa act act tta tcg gta aac gcg tgt aat tta gaa tac gtt	48
Met Asp Lys Thr Thr Leu Ser Val Asn Ala Cys Asn Leu Glu Tyr Val	
1 5 10 15	
aga gaa aag gct ata gta ggc gta caa gca gcc aaa aca tca aca ctt	96
Arg Glu Lys Ala Ile Val Gly Val Gln Ala Ala Lys Thr Ser Thr Leu	
20 25 30	
ata ttc ttt gtt att ata ttg gca att agt gcg cta tta ctc tgg ttt	144
Ile Phe Phe Val Ile Ile Leu Ala Ile Ser Ala Leu Leu Leu Trp Phe	
35 40 45	
cag acg tct gat aat cca gtc ttt aat gaa tta acg aga tat atg cga	192
Gln Thr Ser Asp Asn Pro Val Phe Asn Glu Leu Thr Arg Tyr Met Arg	
50 55 60	
att aaa aat acg gtt aac gat tgg aaa tca tta acg gat agc aaa aca	240
Ile Lys Asn Thr Val Asn Asp Trp Lys Ser Leu Thr Asp Ser Lys Thr	
65 70 75 80	
aaa tta gaa agt gat aga ggt aga ctt cta gcc gct ggt aag gat gat	288
Lys Leu Glu Ser Asp Arg Gly Arg Leu Leu Ala Ala Gly Lys Asp Asp	
85 90 95	
ata ttc gaa ttc aaa tgt gtg gat ttc ggc gcc tat ttt ata gct atg	336
Ile Phe Glu Phe Lys Cys Val Asp Phe Gly Ala Tyr Phe Ile Ala Met	
100 105 110	
cga ttg gat aag aaa aca tat ctg ccg caa gct att agg cga ggt act	384
Arg Leu Asp Lys Lys Thr Tyr Leu Pro Gln Ala Ile Arg Arg Gly Thr	
115 120 125	
gga gac gcg tgg atg gtt aaa aag gcg gca aag gtc gat cca tct gct	432
Gly Asp Ala Trp Met Val Lys Lys Ala Ala Lys Val Asp Pro Ser Ala	
130 135 140	
caa caa ttt tgt cag tat ttg ata aaa cac aag tct aat aat gtt att	480
Gln Gln Phe Cys Gln Tyr Leu Ile Lys His Lys Ser Asn Asn Val Ile	
145 150 155 160	
act tgt ggt aat gag atg tta aat gaa tta ggt tat agc ggt tat ttt	528
Thr Cys Gly Asn Glu Met Leu Asn Glu Leu Gly Tyr Ser Gly Tyr Phe	
165 170 175	
atg tca ccg cat tgg tgt tcc gat ttt agt aat atg gaa tag	570
Met Ser Pro His Trp Cys Ser Asp Phe Ser Asn Met Glu *	
180 185	

<210> 218

<211> 189

<212> PRT

<213> vaccinia virus

<400> 218

Met Asp Lys Thr Thr Leu Ser Val Asn Ala Cys Asn Leu Glu Tyr Val	
1 5 10 15	

Arg	Glu	Lys	Ala	Ile	Val	Gly	Val	Gln	Ala	Ala	Lys	Thr	Ser	Thr	Leu
			20					25					30		
Ile	Phe	Phe	Val	Ile	Ile	Leu	Ala	Ile	Ser	Ala	Leu	Leu	Leu	Trp	Phe
		35					40					45			
Gln	Thr	Ser	Asp	Asn	Pro	Val	Phe	Asn	Glu	Leu	Thr	Arg	Tyr	Met	Arg
	50			55						60					
Ile	Lys	Asn	Thr	Val	Asn	Asp	Trp	Lys	Ser	Leu	Thr	Asp	Ser	Lys	Thr
65				70						75					80
Lys	Leu	Glu	Ser	Asp	Arg	Gly	Arg	Leu	Leu	Ala	Ala	Gly	Lys	Asp	Asp
			85					90					95		
Ile	Phe	Glu	Phe	Lys	Cys	Val	Asp	Phe	Gly	Ala	Tyr	Phe	Ile	Ala	Met
			100					105					110		
Arg	Leu	Asp	Lys	Lys	Thr	Tyr	Leu	Pro	Gln	Ala	Ile	Arg	Arg	Gly	Thr
		115					120					125			
Gly	Asp	Ala	Trp	Met	Val	Lys	Lys	Ala	Ala	Lys	Val	Asp	Pro	Ser	Ala
	130					135					140				
Gln	Gln	Phe	Cys	Gln	Tyr	Leu	Ile	Lys	His	Lys	Ser	Asn	Asn	Val	Ile
145				150					155						160
Thr	Cys	Gly	Asn	Glu	Met	Leu	Asn	Glu	Leu	Gly	Tyr	Ser	Gly	Tyr	Phe
			165					170						175	
Met	Ser	Pro	His	Trp	Cys	Ser	Asp	Phe	Ser	Asn	Met	Glu			
			180					185							

<210> 219
 <211> 972
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(972)

<400> 219																
atg	gcg	gcg	gtg	aaa	act	cct	gtt	att	gtt	gtg	cca	gtt	att	gat	aga	48
Met	Ala	Ala	Val	Lys	Thr	Pro	Val	Ile	Val	Val	Pro	Val	Ile	Asp	Arg	
1				5					10					15		
cct cca tca gaa aca ttt cct aat gtt cat gag cat att aat gat cag															96	
Pro	Pro	Ser	Glu	Thr	Phe	Pro	Asn	Val	His	Glu	His	Ile	Asn	Asp	Gln	
			20					25					30			
aag ttc gat gat gta aag gac aac gaa gtt atg cca gaa aaa aga aat															144	
Lys	Phe	Asp	Asp	Val	Lys	Asp	Asn	Glu	Val	Met	Pro	Glu	Lys	Arg	Asn	
		35					40					45				
gtt gtg gta gtc aag gat gat cca gat cat tac aag gat tat gcg ttt															192	
Val	Val	Val	Val	Lys	Asp	Asp	Pro	Asp	His	Tyr	Lys	Asp	Tyr	Ala	Phe	
		50				55					60					
ata cag tgg act gga gga aac att aga aat gat gac aag tat act cac															240	
Ile	Gln	Trp	Thr	Gly	Gly	Asn	Ile	Arg	Asn	Asp	Asp	Lys	Tyr	Thr	His	
	65				70					75					80	
ttc ttt tca ggg ttt tgt aac act atg tgt aca gag gaa acg aaa aga															288	
Phe	Phe	Ser	Gly	Phe	Cys	Asn	Thr	Met	Cys	Thr	Glu	Glu	Thr	Lys	Arg	
			85						90					95		
aat atc gct aga cat tta gcc cta tgg gat tct aat ttt ttt acc gag															336	

Asn Ile Ala Arg His Leu Ala Leu Trp Asp Ser Asn Phe Phe Thr Glu	
100 105 110	
tta gaa aat aaa aag gta gaa tat gta gtt att gta gaa aac gat aac	384
Leu Glu Asn Lys Lys Val Glu Tyr Val Val Ile Val Glu Asn Asp Asn	
115 120 125	
gtt att gag gat att acg ttt ctt cgt ccc gtc ttg aag gca atg cat	432
Val Ile Glu Asp Ile Thr Phe Leu Arg Pro Val Leu Lys Ala Met His	
130 135 140	
gac aaa aaa ata gat atc cta cag atg aga gaa att att aca ggc aat	480
Asp Lys Lys Ile Asp Ile Leu Gln Met Arg Glu Ile Ile Thr Gly Asn	
145 150 155 160	
aaa gtt aaa acc gag ctt gta atg gac aaa aat cat gcc ata ttc aca	528
Lys Val Lys Thr Glu Leu Val Met Asp Lys Asn His Ala Ile Phe Thr	
165 170 175	
tat aca gga ggg tat gat gtt agc tta tca gcc tat att att aga gtt	576
Tyr Thr Gly Gly Tyr Asp Val Ser Leu Ser Ala Tyr Ile Ile Arg Val	
180 185 190	
act acg gcg ctg aac atc gta gat gaa att ata aag tct gga ggt cta	624
Thr Thr Ala Leu Asn Ile Val Asp Glu Ile Ile Lys Ser Gly Gly Leu	
195 200 205	
tca tcg gga ttt tat ttt gaa ata gcc aga atc gaa aac gaa atg aag	672
Ser Ser Gly Phe Tyr Phe Glu Ile Ala Arg Ile Glu Asn Glu Met Lys	
210 215 220	
atc aat agg cag ata ctg gat aac gcc gcc aaa tat gta gaa cac gat	720
Ile Asn Arg Gln Ile Leu Asp Asn Ala Ala Lys Tyr Val Glu His Asp	
225 230 235 240	
ccc cga ctt gtt gca gaa cac cgc ttc gaa aac atg aaa ccg aat ttt	768
Pro Arg Leu Val Ala Glu His Arg Phe Glu Asn Met Lys Pro Asn Phe	
245 250 255	
tggt tct aga ata gga acg gca gct gct aaa cgt tat cca gga gtt atg	816
Trp Ser Arg Ile Gly Thr Ala Ala Ala Lys Arg Tyr Pro Gly Val Met	
260 265 270	
tac gcg ttt act act cca ctg att tca ttt ttt gga ttg ttt gat att	864
Tyr Ala Phe Thr Thr Pro Leu Ile Ser Phe Phe Gly Leu Phe Asp Ile	
275 280 285	
aat gtt ata ggt ttg att gta att ttg ttt att atg ttt atg ctc atc	912
Asn Val Ile Gly Leu Ile Val Ile Leu Phe Ile Met Phe Met Leu Ile	
290 295 300	
ttt aac gtt aaa tct aag ctg tta tgg ttc ctt aca gga aca ttc gtt	960
Phe Asn Val Lys Ser Lys Leu Leu Trp Phe Leu Thr Gly Thr Phe Val	
305 310 315 320	
acc gca ttt atc	972
Thr Ala Phe Ile	

<210> 220
 <211> 324
 <212> PRT
 <213> vaccinia virus

<400> 220
 Met Ala Ala Val Lys Thr Pro Val Ile Val Val Pro Val Ile Asp Arg
 1 5 10 15
 Pro Pro Ser Glu Thr Phe Pro Asn Val His Glu His Ile Asn Asp Gln
 20 25 30
 Lys Phe Asp Asp Val Lys Asp Asn Glu Val Met Pro Glu Lys Arg Asn
 35 40 45
 Val Val Val Val Lys Asp Asp Pro Asp His Tyr Lys Asp Tyr Ala Phe
 50 55 60
 Ile Gln Trp Thr Gly Gly Asn Ile Arg Asn Asp Asp Lys Tyr Thr His
 65 70 75 80
 Phe Phe Ser Gly Phe Cys Asn Thr Met Cys Thr Glu Glu Thr Lys Arg
 85 90 95
 Asn Ile Ala Arg His Leu Ala Leu Trp Asp Ser Asn Phe Phe Thr Glu
 100 105 110
 Leu Glu Asn Lys Lys Val Glu Tyr Val Val Ile Val Glu Asn Asp Asn
 115 120 125
 Val Ile Glu Asp Ile Thr Phe Leu Arg Pro Val Leu Lys Ala Met His
 130 135 140
 Asp Lys Lys Ile Asp Ile Leu Gln Met Arg Glu Ile Ile Thr Gly Asn
 145 150 155 160
 Lys Val Lys Thr Glu Leu Val Met Asp Lys Asn His Ala Ile Phe Thr
 165 170 175
 Tyr Thr Gly Gly Tyr Asp Val Ser Leu Ser Ala Tyr Ile Ile Arg Val
 180 185 190
 Thr Thr Ala Leu Asn Ile Val Asp Glu Ile Ile Lys Ser Gly Gly Leu
 195 200 205
 Ser Ser Gly Phe Tyr Phe Glu Ile Ala Arg Ile Glu Asn Glu Met Lys
 210 215 220
 Ile Asn Arg Gln Ile Leu Asp Asn Ala Ala Lys Tyr Val Glu His Asp
 225 230 235 240
 Pro Arg Leu Val Ala Glu His Arg Phe Glu Asn Met Lys Pro Asn Phe
 245 250 255
 Trp Ser Arg Ile Gly Thr Ala Ala Ala Lys Arg Tyr Pro Gly Val Met
 260 265 270
 Tyr Ala Phe Thr Thr Pro Leu Ile Ser Phe Phe Gly Leu Phe Asp Ile
 275 280 285
 Asn Val Ile Gly Leu Ile Val Ile Leu Phe Ile Met Phe Met Leu Ile
 290 295 300
 Phe Asn Val Lys Ser Lys Leu Leu Trp Phe Leu Thr Gly Thr Phe Val
 305 310 315 320
 Thr Ala Phe Ile

<210> 221
 <211> 2385
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(2385)

<400> 221

atg gac tct aaa gag act att cta att gag atc att cca aaa ata aaa	48
Met Asp Ser Lys Glu Thr Ile Leu Ile Glu Ile Ile Pro Lys Ile Lys	
1 5 10 15	
gca tat cta cta gac gcg aat ata agt cca aaa tcc tac gat gac ttt	96
Ala Tyr Leu Leu Asp Ala Asn Ile Ser Pro Lys Ser Tyr Asp Asp Phe	
20 25 30	
att tca cga aat aaa aat att ttc gtt atc aac ctt tat aac gta tcg	144
Ile Ser Arg Asn Lys Asn Ile Phe Val Ile Asn Leu Tyr Asn Val Ser	
35 40 45	
act atc aca gaa gaa gat ata cga ttg tta tac act acg ata gaa cag	192
Thr Ile Thr Glu Glu Asp Ile Arg Leu Leu Tyr Thr Thr Ile Glu Gln	
50 55 60	
aat att gac gcg gat gat caa aca ctg gtt gct att ttt tcg tat ata	240
Asn Ile Asp Ala Asp Asp Gln Thr Leu Val Ala Ile Phe Ser Tyr Ile	
65 70 75 80	
gga tat aaa ttt gaa cag gct gtt aaa gaa gag att agt acg agt tta	288
Gly Tyr Lys Phe Glu Gln Ala Val Lys Glu Glu Ile Ser Thr Ser Leu	
85 90 95	
tcc ttc aat gac aag aat acc aca gat gaa atg acg tat aac ttg tat	336
Ser Phe Asn Asp Lys Asn Thr Thr Asp Glu Met Thr Tyr Asn Leu Tyr	
100 105 110	
gat ctt ttt ttt aac aca tta gac atg tat tta cga caa aag aag atc	384
Asp Leu Phe Phe Asn Thr Leu Asp Met Tyr Leu Arg Gln Lys Lys Ile	
115 120 125	
agt att ctg gta aat gat gat gtt aga ggt gat gta atc gtt agt tat	432
Ser Ile Leu Val Asn Asp Asp Val Arg Gly Asp Val Ile Val Ser Tyr	
130 135 140	
aaa aat agt gac tta gtt tca tca ttt aat gcg gaa cta gaa cca gag	480
Lys Asn Ser Asp Leu Val Ser Ser Phe Asn Ala Glu Leu Glu Pro Glu	
145 150 155 160	
att aag aag ata ccg ttc aat atg aaa aat cta tta ccg tac ttg gaa	528
Ile Lys Lys Ile Pro Phe Asn Met Lys Asn Leu Leu Pro Tyr Leu Glu	
165 170 175	
aag aat ttg gac caa cta aga ttc tct aaa aaa tat tta gac ttt gca	576
Lys Asn Leu Asp Gln Leu Arg Phe Ser Lys Lys Tyr Leu Asp Phe Ala	
180 185 190	
tat tta tgt aga cac atc ggt att ccc att tcc aaa aaa aag tat aat	624
Tyr Leu Cys Arg His Ile Gly Ile Pro Ile Ser Lys Lys Lys Tyr Asn	
195 200 205	
gtg cga tat gta ttt ctt tat aaa ata gac gga tta tcc att cct att	672
Val Arg Tyr Val Phe Leu Tyr Lys Ile Asp Gly Leu Ser Ile Pro Ile	
210 215 220	
atc att aag gat ttt tta gat gtt aag tac gta tat ttg gaa aat act	720
Ile Ile Lys Asp Phe Leu Asp Val Lys Tyr Val Tyr Leu Glu Asn Thr	

225	230	235	240	
gga aaa att tat	aaa aat tct ttt tcc	gaa gac cat aac aac agt cta		768
Gly Lys Ile Tyr	Lys Asn Ser Phe Ser	Glu Asp His Asn Asn Ser Leu		
	245	250	255	
tct gat tgg ggt	aaa gtt att ata cct	ctc tta aag gat cgt cat cta		816
Ser Asp Trp Gly	Lys Val Ile Ile Pro	Leu Leu Lys Asp Arg His Leu		
	260	265	270	
tat agc tac atc	ttt cta tct agt tat	cat tta cat agt tac tat aca		864
Tyr Ser Tyr Ile	Phe Leu Ser Ser Tyr	His Leu His Ser Tyr Tyr Thr		
	275	280	285	
gat ctc atc gcg	aga gac gag cct gtg	ttt gtg aaa cgc aaa aaa cta		912
Asp Leu Ile Ala	Arg Asp Glu Pro Val	Phe Val Lys Arg Lys Lys Leu		
	290	295	300	
gat att ata gag	atc gat gaa cct gag	gca tgg aaa agg gat gtt aga		960
Asp Ile Ile Glu	Ile Asp Glu Pro Glu	Ala Trp Lys Arg Asp Val Arg		
	310	315	320	
gtg gaa ttc gca	ccg tgt gag cat caa	att aga ttg aag gaa gct atg		1008
Val Glu Phe Ala	Pro Cys Glu His Gln	Ile Arg Leu Lys Glu Ala Met		
	325	330	335	
aaa gtt gac gct	aac tat ttc act aaa	att aat aat ttt gct aac gaa		1056
Lys Val Asp Ala	Asn Tyr Phe Thr Lys	Ile Asn Asn Phe Ala Asn Glu		
	340	345	350	
ttt att tat tat	gaa gat ggt gtg gca	tat tgt aga gtg tgt gga ata		1104
Phe Ile Tyr Tyr	Glu Asp Gly Val Ala	Tyr Cys Arg Val Cys Gly Ile		
	355	360	365	
aat ata cct ata	ttt aat tta gat gcc	gct gac gtg att aaa aat aca		1152
Asn Ile Pro Ile	Phe Asn Leu Asp Ala	Ala Asp Val Ile Lys Asn Thr		
	370	375	380	
gtt atc gtt tcc	acg ttt aac aag act	ata ttc ttg agc gaa cca tat		1200
Val Ile Val Ser	Thr Phe Asn Lys Thr	Ile Phe Leu Ser Glu Pro Tyr		
	390	395	400	
agc tat ttc gtt	cat agt cag cgc ttt	atc ttt aat att atc atg tct		1248
Ser Tyr Phe Val	His Ser Gln Arg Phe	Ile Phe Asn Ile Ile Met Ser		
	405	410	415	
ttt gat aat att	atg aaa tct caa act	tgg gta atg aaa tac aac att		1296
Phe Asp Asn Ile	Met Lys Ser Gln Thr	Trp Val Met Lys Tyr Asn Ile		
	420	425	430	
aac cga cta att	ctt aac ttt ctt att	gat ata aac tct aga cgt cag		1344
Asn Arg Leu Ile	Leu Asn Phe Leu Ile	Asp Ile Asn Ser Arg Arg Gln		
	435	440	445	
gaa tac gaa aaa	aag ttt tct tct gaa	att aag aga ggt ctg ttc ttt		1392
Glu Tyr Glu Lys	Lys Phe Ser Ser Glu	Ile Lys Arg Gly Leu Phe Phe		
	450	455	460	
ctt cgt ttg tct	gca aac tta ttc gaa	agt caa gta tcg tct aca gag		1440

Leu	Arg	Leu	Ser	Ala	Asn	Leu	Phe	Glu	Ser	Gln	Val	Ser	Ser	Thr	Glu	
465					470					475					480	
tta	ttt	tat	gtt	tcc	aaa	atg	ctt	aat	ttg	aac	tat	ata	gtt	gcg	tta	1488
Leu	Phe	Tyr	Val	Ser	Lys	Met	Leu	Asn	Leu	Asn	Tyr	Ile	Val	Ala	Leu	
				485					490					495		
gta	atc	att	ctt	aac	agt	agt	gcg	gac	ttt	ata	gtt	tcc	tat	atg	aca	1536
Val	Ile	Ile	Leu	Asn	Ser	Ser	Ala	Asp	Phe	Ile	Val	Ser	Tyr	Met	Thr	
			500					505					510			
tcc	aag	aac	aaa	acg	gta	gaa	gaa	tcc	act	ctt	aaa	tac	gcc	atc	tcc	1584
Ser	Lys	Asn	Lys	Thr	Val	Glu	Glu	Ser	Thr	Leu	Lys	Tyr	Ala	Ile	Ser	
		515					520					525				
gtg	gtt	ata	tac	gat	ttt	ttg	gtt	aag	act	aga	att	tgc	gag	aag	gga	1632
Val	Val	Ile	Tyr	Asp	Phe	Leu	Val	Lys	Thr	Arg	Ile	Cys	Glu	Lys	Gly	
	530					535					540					
tcg	ttg	gat	act	ata	gtt	tta	ttt	acc	gat	gta	tac	aca	tct	ata	atg	1680
Ser	Leu	Asp	Thr	Ile	Val	Leu	Phe	Thr	Asp	Val	Tyr	Thr	Ser	Ile	Met	
545					550					555					560	
ccg	gag	gaa	ttg	gat	tta	cat	ttt	cag	aga	atc	aca	tta	gaa	ctt	aga	1728
Pro	Glu	Glu	Leu	Asp	Leu	His	Phe	Gln	Arg	Ile	Thr	Leu	Glu	Leu	Arg	
				565					570					575		
aaa	cta	gta	tcc	att	cag	aga	tcg	gcg	tta	gaa	ccc	aat	tac	gat	gta	1776
Lys	Leu	Val	Ser	Ile	Gln	Arg	Ser	Ala	Leu	Glu	Pro	Asn	Tyr	Asp	Val	
			580					585					590			
gaa	agt	cgc	ggc	gaa	gag	ctt	ccg	cta	tct	gca	tta	aag	ttt	ttc	gat	1824
Glu	Ser	Arg	Gly	Glu	Glu	Leu	Pro	Leu	Ser	Ala	Leu	Lys	Phe	Phe	Asp	
		595					600					605				
aca	agc	acc	att	ata	gtt	aaa	aca	atg	gct	cca	gta	cat	aca	tgt	gta	1872
Thr	Ser	Thr	Ile	Ile	Val	Lys	Thr	Met	Ala	Pro	Val	His	Thr	Cys	Val	
		610				615					620					
gaa	caa	aaa	att	gtt	gca	cct	act	cca	tct	gta	gaa	cca	act	gat	gca	1920
Glu	Gln	Lys	Ile	Val	Ala	Pro	Thr	Pro	Ser	Val	Glu	Pro	Thr	Asp	Ala	
625					630					635					640	
tct	ctt	aaa	aac	ttc	aaa	gag	cta	acg	tgt	gac	gaa	gat	att	aag	att	1968
Ser	Leu	Lys	Asn	Phe	Lys	Glu	Leu	Thr	Cys	Asp	Glu	Asp	Ile	Lys	Ile	
			645						650					655		
ttg	att	aga	gtt	cat	gat	act	aat	gct	aca	aaa	tta	gtc	att	ttt	cca	2016
Leu	Ile	Arg	Val	His	Asp	Thr	Asn	Ala	Thr	Lys	Leu	Val	Ile	Phe	Pro	
			660					665					670			
tca	cat	cta	aaa	ata	gaa	att	gag	aga	aaa	aaa	cta	att	ata	ccg	cta	2064
Ser	His	Leu	Lys	Ile	Glu	Ile	Glu	Arg	Lys	Lys	Leu	Ile	Ile	Pro	Leu	
			675				680						685			
aag	agt	tta	tat	att	acc	aat	act	ctc	aaa	tat	tat	tat	tct	aac	tcc	2112
Lys	Ser	Leu	Tyr	Ile	Thr	Asn	Thr	Leu	Lys	Tyr	Tyr	Tyr	Ser	Asn	Ser	
		690				695					700					

tat tta tac gtt ttc aga ttc gga gat cct atg cca ttc gaa gaa gaa	2160
Tyr Leu Tyr Val Phe Arg Phe Gly Asp Pro Met Pro Phe Glu Glu Glu	
705 710 715 720	
ctc ata gat cac gaa cat gtg caa tac aaa ata aat tgt tac aat att	2208
Leu Ile Asp His Glu His Val Gln Tyr Lys Ile Asn Cys Tyr Asn Ile	
725 730 735	
cta aga tat cat tta ttg cca gac agt gac gtg ttt gta tat ttt agt	2256
Leu Arg Tyr His Leu Leu Pro Asp Ser Asp Val Phe Val Tyr Phe Ser	
740 745 750	
aat tca tta aac aga gaa gca ttg gaa tac gca ttt tat atc ttt ttg	2304
Asn Ser Leu Asn Arg Glu Ala Leu Glu Tyr Ala Phe Tyr Ile Phe Leu	
755 760 765	
tcg aaa tat gta aat gtg aaa caa tgg ata gac gaa aat ata act cgt	2352
Ser Lys Tyr Val Asn Val Lys Gln Trp Ile Asp Glu Asn Ile Thr Arg	
770 775 780	
att aaa gag ttg tat atg att aat ttc aat aac	2385
Ile Lys Glu Leu Tyr Met Ile Asn Phe Asn Asn	
785 790 795	

<210> 222
 <211> 795
 <212> PRT
 <213> vaccinia virus

<400> 222

Met Asp Ser Lys Glu Thr Ile Leu Ile Glu Ile Ile Pro Lys Ile Lys	
1 5 10 15	
Ala Tyr Leu Leu Asp Ala Asn Ile Ser Pro Lys Ser Tyr Asp Asp Phe	
20 25 30	
Ile Ser Arg Asn Lys Asn Ile Phe Val Ile Asn Leu Tyr Asn Val Ser	
35 40 45	
Thr Ile Thr Glu Glu Asp Ile Arg Leu Leu Tyr Thr Thr Ile Glu Gln	
50 55 60	
Asn Ile Asp Ala Asp Asp Gln Thr Leu Val Ala Ile Phe Ser Tyr Ile	
65 70 75 80	
Gly Tyr Lys Phe Glu Gln Ala Val Lys Glu Glu Ile Ser Thr Ser Leu	
85 90 95	
Ser Phe Asn Asp Lys Asn Thr Thr Asp Glu Met Thr Tyr Asn Leu Tyr	
100 105 110	
Asp Leu Phe Phe Asn Thr Leu Asp Met Tyr Leu Arg Gln Lys Lys Ile	
115 120 125	
Ser Ile Leu Val Asn Asp Asp Val Arg Gly Asp Val Ile Val Ser Tyr	
130 135 140	
Lys Asn Ser Asp Leu Val Ser Ser Phe Asn Ala Glu Leu Glu Pro Glu	
145 150 155 160	
Ile Lys Lys Ile Pro Phe Asn Met Lys Asn Leu Leu Pro Tyr Leu Glu	
165 170 175	
Lys Asn Leu Asp Gln Leu Arg Phe Ser Lys Lys Tyr Leu Asp Phe Ala	
180 185 190	
Tyr Leu Cys Arg His Ile Gly Ile Pro Ile Ser Lys Lys Lys Tyr Asn	
195 200 205	
Val Arg Tyr Val Phe Leu Tyr Lys Ile Asp Gly Leu Ser Ile Pro Ile	
210 215 220	

Ile	Ile	Lys	Asp	Phe	Leu	Asp	Val	Lys	Tyr	Val	Tyr	Leu	Glu	Asn	Thr	225	230	235	240
Gly	Lys	Ile	Tyr	Lys	Asn	Ser	Phe	Ser	Glu	Asp	His	Asn	Asn	Ser	Leu	245	250	255	
Ser	Asp	Trp	Gly	Lys	Val	Ile	Ile	Pro	Leu	Leu	Lys	Asp	Arg	His	Leu	260	265	270	
Tyr	Ser	Tyr	Ile	Phe	Leu	Ser	Ser	Tyr	His	Leu	His	Ser	Tyr	Tyr	Thr	275	280	285	
Asp	Leu	Ile	Ala	Arg	Asp	Glu	Pro	Val	Phe	Val	Lys	Arg	Lys	Lys	Leu	290	295	300	
Asp	Ile	Ile	Glu	Ile	Asp	Glu	Pro	Glu	Ala	Trp	Lys	Arg	Asp	Val	Arg	305	310	315	320
Val	Glu	Phe	Ala	Pro	Cys	Glu	His	Gln	Ile	Arg	Leu	Lys	Glu	Ala	Met	325	330	335	
Lys	Val	Asp	Ala	Asn	Tyr	Phe	Thr	Lys	Ile	Asn	Asn	Phe	Ala	Asn	Glu	340	345	350	
Phe	Ile	Tyr	Glu	Asp	Gly	Val	Ala	Tyr	Cys	Arg	Val	Cys	Gly	Ile		355	360	365	
Asn	Ile	Pro	Ile	Phe	Asn	Leu	Asp	Ala	Ala	Asp	Val	Ile	Lys	Asn	Thr	370	375	380	
Val	Ile	Val	Ser	Thr	Phe	Asn	Lys	Thr	Ile	Phe	Leu	Ser	Glu	Pro	Tyr	385	390	395	400
Ser	Tyr	Phe	Val	His	Ser	Gln	Arg	Phe	Ile	Phe	Asn	Ile	Ile	Met	Ser	405	410	415	
Phe	Asp	Asn	Ile	Met	Lys	Ser	Gln	Thr	Trp	Val	Met	Lys	Tyr	Asn	Ile	420	425	430	
Asn	Arg	Leu	Ile	Leu	Asn	Phe	Leu	Ile	Asp	Ile	Asn	Ser	Arg	Arg	Gln	435	440	445	
Glu	Tyr	Glu	Lys	Lys	Phe	Ser	Ser	Glu	Ile	Lys	Arg	Gly	Leu	Phe	Phe	450	455	460	
Leu	Arg	Leu	Ser	Ala	Asn	Leu	Phe	Glu	Ser	Gln	Val	Ser	Ser	Thr	Glu	465	470	475	480
Leu	Phe	Tyr	Val	Ser	Lys	Met	Leu	Asn	Leu	Asn	Tyr	Ile	Val	Ala	Leu	485	490	495	
Val	Ile	Ile	Leu	Asn	Ser	Ser	Ala	Asp	Phe	Ile	Val	Ser	Tyr	Met	Thr	500	505	510	
Ser	Lys	Asn	Lys	Thr	Val	Glu	Glu	Ser	Thr	Leu	Lys	Tyr	Ala	Ile	Ser	515	520	525	
Val	Val	Ile	Tyr	Asp	Phe	Leu	Val	Lys	Thr	Arg	Ile	Cys	Glu	Lys	Gly	530	535	540	
Ser	Leu	Asp	Thr	Ile	Val	Leu	Phe	Thr	Asp	Val	Tyr	Thr	Ser	Ile	Met	545	550	555	560
Pro	Glu	Glu	Leu	Asp	Leu	His	Phe	Gln	Arg	Ile	Thr	Leu	Glu	Leu	Arg	565	570	575	
Lys	Leu	Val	Ser	Ile	Gln	Arg	Ser	Ala	Leu	Glu	Pro	Asn	Tyr	Asp	Val	580	585	590	
Glu	Ser	Arg	Gly	Glu	Glu	Leu	Pro	Leu	Ser	Ala	Leu	Lys	Phe	Phe	Asp	595	600	605	
Thr	Ser	Thr	Ile	Ile	Val	Lys	Thr	Met	Ala	Pro	Val	His	Thr	Cys	Val	610	615	620	
Glu	Gln	Lys	Ile	Val	Ala	Pro	Thr	Pro	Ser	Val	Glu	Pro	Thr	Asp	Ala	625	630	635	640
Ser	Leu	Lys	Asn	Phe	Lys	Glu	Leu	Thr	Cys	Asp	Glu	Asp	Ile	Lys	Ile	645	650	655	
Leu	Ile	Arg	Val	His	Asp	Thr	Asn	Ala	Thr	Lys	Leu	Val	Ile	Phe	Pro	660	665	670	
Ser	His	Leu	Lys	Ile	Glu	Ile	Glu	Arg	Lys	Lys	Leu	Ile	Ile	Pro	Leu	675	680	685	
Lys	Ser	Leu	Tyr	Ile	Thr	Asn	Thr	Leu	Lys	Tyr	Tyr	Tyr	Ser	Asn	Ser				

690		695		700
Tyr Leu Tyr Val Phe Arg Phe Gly Asp Pro Met Pro Phe Glu Glu Glu				
705		710		715
Leu Ile Asp His Glu His Val Gln Tyr Lys Ile Asn Cys Tyr Asn Ile				
	725		730	735
Leu Arg Tyr His Leu Leu Pro Asp Ser Asp Val Phe Val Tyr Phe Ser				
	740		745	750
Asn Ser Leu Asn Arg Glu Ala Leu Glu Tyr Ala Phe Tyr Ile Phe Leu				
	755		760	765
Ser Lys Tyr Val Asn Val Lys Gln Trp Ile Asp Glu Asn Ile Thr Arg				
	770		775	780
Ile Lys Glu Leu Tyr Met Ile Asn Phe Asn Asn				
785		790		795

<210> 223
 <211> 612
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(612)

<400> 223	
atg gcg tgg tca att aca aat aaa gcg gat act agt agc ttc aca aag	48
Met Ala Trp Ser Ile Thr Asn Lys Ala Asp Thr Ser Ser Phe Thr Lys	
1 5 10 15	
atg gct gaa atc aga gct cat cta aaa aat agc gct gaa aat aaa gat	96
Met Ala Glu Ile Arg Ala His Leu Lys Asn Ser Ala Glu Asn Lys Asp	
20 25 30	
aaa aac gag gat att ttc ccg gaa gat gta ata att cca tct act aag	144
Lys Asn Glu Asp Ile Phe Pro Glu Asp Val Ile Ile Pro Ser Thr Lys	
35 40 45	
ccc aaa acc aaa cga gcc act act cct cgt aaa cca gcg gct act aaa	192
Pro Lys Thr Lys Arg Ala Thr Thr Pro Arg Lys Pro Ala Ala Thr Lys	
50 55 60	
aga tca acc aaa aag gag gaa gtg gaa gaa gaa gta gtt ata gag gaa	240
Arg Ser Thr Lys Lys Glu Glu Val Glu Glu Glu Val Val Ile Glu Glu	
65 70 75 80	
tat cat caa aca act gaa aaa aat tct cca tct cct gga gtc ggc gac	288
Tyr His Gln Thr Thr Glu Lys Asn Ser Pro Ser Pro Gly Val Gly Asp	
85 90 95	
att gta gaa agc gtg gct gct gta gag ctc gat gat agc gac ggg gat	336
Ile Val Glu Ser Val Ala Ala Val Glu Leu Asp Asp Ser Asp Gly Asp	
100 105 110	
gat gaa cct atg gta caa gtt gaa gct ggt aaa gta aat cat agt gct	384
Asp Glu Pro Met Val Gln Val Glu Ala Gly Lys Val Asn His Ser Ala	
115 120 125	
aga agc gat ctt tct gac cta aag gtg gct acc gac aat atc gtt aaa	432
Arg Ser Asp Leu Ser Asp Leu Lys Val Ala Thr Asp Asn Ile Val Lys	

130	135	140	
gat ctt aag aaa att att act aga atc tct gca gta tcg acg gtt cta			480
Asp Leu Lys Lys Ile Ile Thr Arg Ile Ser Ala Val Ser Thr Val Leu			
145	150	155	160
gag gat gtt caa gca gct ggt atc tct aga caa ttt act tct atg act			528
Glu Asp Val Gln Ala Ala Gly Ile Ser Arg Gln Phe Thr Ser Met Thr			
	165	170	175
aaa gct att aca aca cta tct gat cta gtc acc gag gga aaa tct aaa			576
Lys Ala Ile Thr Thr Leu Ser Asp Leu Val Thr Glu Gly Lys Ser Lys			
	180	185	190
gtt gtt cgt aaa aaa gtt aaa act tgt aag aag taa			612
Val Val Arg Lys Lys Val Lys Thr Cys Lys Lys *			
	195	200	

<210> 224
 <211> 203
 <212> PRT
 <213> vaccinia virus

<400> 224

Met Ala Trp Ser Ile Thr Asn Lys Ala Asp Thr Ser Ser Phe Thr Lys			
1	5	10	15
Met Ala Glu Ile Arg Ala His Leu Lys Asn Ser Ala Glu Asn Lys Asp			
	20	25	30
Lys Asn Glu Asp Ile Phe Pro Glu Asp Val Ile Ile Pro Ser Thr Lys			
	35	40	45
Pro Lys Thr Lys Arg Ala Thr Thr Pro Arg Lys Pro Ala Ala Thr Lys			
	50	55	60
Arg Ser Thr Lys Lys Glu Glu Val Glu Glu Glu Val Val Ile Glu Glu			
65	70	75	80
Tyr His Gln Thr Thr Glu Lys Asn Ser Pro Ser Pro Gly Val Gly Asp			
	85	90	95
Ile Val Glu Ser Val Ala Ala Val Glu Leu Asp Asp Ser Asp Gly Asp			
	100	105	110
Asp Glu Pro Met Val Gln Val Glu Ala Gly Lys Val Asn His Ser Ala			
	115	120	125
Arg Ser Asp Leu Ser Asp Leu Lys Val Ala Thr Asp Asn Ile Val Lys			
	130	135	140
Asp Leu Lys Lys Ile Ile Thr Arg Ile Ser Ala Val Ser Thr Val Leu			
145	150	155	160
Glu Asp Val Gln Ala Ala Gly Ile Ser Arg Gln Phe Thr Ser Met Thr			
	165	170	175
Lys Ala Ile Thr Thr Leu Ser Asp Leu Val Thr Glu Gly Lys Ser Lys			
	180	185	190
Val Val Arg Lys Lys Val Lys Thr Cys Lys Lys			
	195	200	

<210> 225
 <211> 945
 <212> DNA
 <213> vaccinia virus

<220>

<221> CDS
 <222> (1)...(945)

<400> 225

atg cgt gca ctt ttt tat aaa gat ggt aaa ctc ttt acc gat aat aat	48
Met Arg Ala Leu Phe Tyr Lys Asp Gly Lys Leu Phe Thr Asp Asn Asn	
1 5 10 15	
ttt tta aat cct gta tta gat gat aat cca gcg tat gag gtt ttg caa	96
Phe Leu Asn Pro Val Leu Asp Asp Asn Pro Ala Tyr Glu Val Leu Gln	
20 25 30	
cat gtt aaa att cct act cat tta aca gat gta gta gta tat gaa caa	144
His Val Lys Ile Pro Thr His Leu Thr Asp Val Val Val Tyr Glu Gln	
35 40 45	
acg tgg gaa gag gca tta act aga tta att ttt gtg gga agc gat tca	192
Thr Trp Glu Glu Ala Leu Thr Arg Leu Ile Phe Val Gly Ser Asp Ser	
50 55 60	
aaa gga cgt aga caa tac ttt tac gga aaa atg cat gta cag aat cgc	240
Lys Gly Arg Arg Gln Tyr Phe Tyr Gly Lys Met His Val Gln Asn Arg	
65 70 75 80	
aac gct aaa aga gat cgt att ttt gtt aga gta tat aac gtt atg aaa	288
Asn Ala Lys Arg Asp Arg Ile Phe Val Arg Val Tyr Asn Val Met Lys	
85 90 95	
cga att aat tgt ttt ata aac aaa aat ata aag aaa tcg tcc aca gat	336
Arg Ile Asn Cys Phe Ile Asn Lys Asn Ile Lys Lys Ser Ser Thr Asp	
100 105 110	
tcc aat tat cag ttg gcg gtt ttt atg tta atg gaa act atg ttt ttt	384
Ser Asn Tyr Gln Leu Ala Val Phe Met Leu Met Glu Thr Met Phe Phe	
115 120 125	
att aga ttt ggt aaa atg aaa tat ctt aag gag aat gaa aca gta ggg	432
Ile Arg Phe Gly Lys Met Lys Tyr Leu Lys Glu Asn Glu Thr Val Gly	
130 135 140	
tta tta aca cta aaa aat aaa cac ata gaa ata agt ccc gat gaa ata	480
Leu Leu Thr Leu Lys Asn Lys His Ile Glu Ile Ser Pro Asp Glu Ile	
145 150 155 160	
gtt atc aag ttt gta gga aag gac aaa gtt tca cat gaa ttt gtt gtt	528
Val Ile Lys Phe Val Gly Lys Asp Lys Val Ser His Glu Phe Val Val	
165 170 175	
cat aag tct aat aga cta tat aaa ccg cta ttg aaa ctg acg gat gat	576
His Lys Ser Asn Arg Leu Tyr Lys Pro Leu Leu Lys Leu Thr Asp Asp	
180 185 190	
tct agt ccc gaa gaa ttt ctg ttc aac aaa cta agt gaa cga aag gta	624
Ser Ser Pro Glu Glu Phe Leu Phe Asn Lys Leu Ser Glu Arg Lys Val	
195 200 205	
tac gaa tgt atc aaa cag ttt ggt att aga atc aag gat ctc cga acg	672
Tyr Glu Cys Ile Lys Gln Phe Gly Ile Arg Ile Lys Asp Leu Arg Thr	
210 215 220	

tat gga gtc aat tat acg ttt tta tat aat ttt tgg aca aat gta aag	720
Tyr Gly Val Asn Tyr Thr Phe Leu Tyr Asn Phe Trp Thr Asn Val Lys	
225 230 235 240	
tcc ata tct cct ctt ccg tca cca aaa aag tta ata gca tta act atc	768
Ser Ile Ser Pro Leu Pro Ser Pro Lys Lys Leu Ile Ala Leu Thr Ile	
245 250 255	
aaa caa act gct gaa gtt gta ggt cat act cca tca att tca aaa aga	816
Lys Gln Thr Ala Glu Val Val Gly His Thr Pro Ser Ile Ser Lys Arg	
260 265 270	
gct tat atg gca acg act att tta gaa atg gta aag gat aaa aat ttt	864
Ala Tyr Met Ala Thr Thr Ile Leu Glu Met Val Lys Asp Lys Asn Phe	
275 280 285	
tta gat gta gta tct aaa act acg ttc gat gaa ttc cta tct ata gtc	912
Leu Asp Val Val Ser Lys Thr Thr Phe Asp Glu Phe Leu Ser Ile Val	
290 295 300	
gta gat cac gtt aaa tca tct acg gat gga tga	945
Val Asp His Val Lys Ser Ser Thr Asp Gly *	
305 310	

<210> 226
 <211> 314
 <212> PRT
 <213> vaccinia virus

<400> 226

Met Arg Ala Leu Phe Tyr Lys Asp Gly Lys Leu Phe Thr Asp Asn Asn	
1 5 10 15	
Phe Leu Asn Pro Val Leu Asp Asp Asn Pro Ala Tyr Glu Val Leu Gln	
20 25 30	
His Val Lys Ile Pro Thr His Leu Thr Asp Val Val Val Tyr Glu Gln	
35 40 45	
Thr Trp Glu Glu Ala Leu Thr Arg Leu Ile Phe Val Gly Ser Asp Ser	
50 55 60	
Lys Gly Arg Arg Gln Tyr Phe Tyr Gly Lys Met His Val Gln Asn Arg	
65 70 75 80	
Asn Ala Lys Arg Asp Arg Ile Phe Val Arg Val Tyr Asn Val Met Lys	
85 90 95	
Arg Ile Asn Cys Phe Ile Asn Lys Asn Ile Lys Lys Ser Ser Thr Asp	
100 105 110	
Ser Asn Tyr Gln Leu Ala Val Phe Met Leu Met Glu Thr Met Phe Phe	
115 120 125	
Ile Arg Phe Gly Lys Met Lys Tyr Leu Lys Glu Asn Glu Thr Val Gly	
130 135 140	
Leu Leu Thr Leu Lys Asn Lys His Ile Glu Ile Ser Pro Asp Glu Ile	
145 150 155 160	
Val Ile Lys Phe Val Gly Lys Asp Lys Val Ser His Glu Phe Val Val	
165 170 175	
His Lys Ser Asn Arg Leu Tyr Lys Pro Leu Leu Lys Leu Thr Asp Asp	
180 185 190	
Ser Ser Pro Glu Glu Phe Leu Phe Asn Lys Leu Ser Glu Arg Lys Val	
195 200 205	
Tyr Glu Cys Ile Lys Gln Phe Gly Ile Arg Ile Lys Asp Leu Arg Thr	

210		215		220
Tyr Gly Val Asn Tyr Thr Phe Leu Tyr Asn Phe Trp Thr Asn Val Lys				
225		230		235
Ser Ile Ser Pro Leu Pro Ser Pro Lys Lys Leu Ile Ala Leu Thr Ile				
	245		250	255
Lys Gln Thr Ala Glu Val Val Gly His Thr Pro Ser Ile Ser Lys Arg				
	260		265	270
Ala Tyr Met Ala Thr Thr Ile Leu Glu Met Val Lys Asp Lys Asn Phe				
	275	280		285
Leu Asp Val Val Ser Lys Thr Thr Phe Asp Glu Phe Leu Ser Ile Val				
	290	295	300	
Val Asp His Val Lys Ser Ser Thr Asp Gly				
305		310		

<210> 227
 <211> 441
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(441)

<400> 227	
atg gaa atg gat aag cgt ata aaa tct ctc gca atg acc gct ttc ttt	48
Met Glu Met Asp Lys Arg Ile Lys Ser Leu Ala Met Thr Ala Phe Phe	
1 5 10 15	
ggg gag cta agc aca tta gat att atg gca ttg ata atg tct ata ttt	96
Gly Glu Leu Ser Thr Leu Asp Ile Met Ala Leu Ile Met Ser Ile Phe	
20 25 30	
aaa cgc cat cca aac aat acc att ttt tca gtg gat aag gat ggt cag	144
Lys Arg His Pro Asn Asn Thr Ile Phe Ser Val Asp Lys Asp Gly Gln	
35 40 45	
ttt atg att gat ttc gaa tac gat aat tat aag gct tct caa tat ttg	192
Phe Met Ile Asp Phe Glu Tyr Asp Asn Tyr Lys Ala Ser Gln Tyr Leu	
50 55 60	
gat ctg acc ctc act ccg ata ttt gga gat gaa tgc aag act cac gca	240
Asp Leu Thr Leu Thr Pro Ile Phe Gly Asp Glu Cys Lys Thr His Ala	
65 70 75 80	
tcg agt ata gcc gaa caa ttg gcg tgt gcg gat att att aaa gag gat	288
Ser Ser Ile Ala Glu Gln Leu Ala Cys Ala Asp Ile Ile Lys Glu Asp	
85 90 95	
att agc gaa tac atc aaa act act ccc cgt ctt aaa cga ttt ata aaa	336
Ile Ser Glu Tyr Ile Lys Thr Thr Pro Arg Leu Lys Arg Phe Ile Lys	
100 105 110	
aaa tac cgc aat aga tca gat act cgt atc agt cga gat aca gaa aag	384
Lys Tyr Arg Asn Arg Ser Asp Thr Arg Ile Ser Arg Asp Thr Glu Lys	
115 120 125	
ctt aaa ata gct cta gct aaa ggc ata gat tac gaa tat ata aaa gac	432
Leu Lys Ile Ala Leu Ala Lys Gly Ile Asp Tyr Glu Tyr Ile Lys Asp	

130 135 140 441

gct tgt taa
Ala Cys *
145

<210> 228
<211> 146
<212> PRT
<213> vaccinia virus

<400> 228
Met Glu Met Asp Lys Arg Ile Lys Ser Leu Ala Met Thr Ala Phe Phe
1 5 10 15
Gly Glu Leu Ser Thr Leu Asp Ile Met Ala Leu Ile Met Ser Ile Phe
20 25 30
Lys Arg His Pro Asn Asn Thr Ile Phe Ser Val Asp Lys Asp Gly Gln
35 40 45
Phe Met Ile Asp Phe Glu Tyr Asp Asn Tyr Lys Ala Ser Gln Tyr Leu
50 55 60
Asp Leu Thr Leu Thr Pro Ile Phe Gly Asp Glu Cys Lys Thr His Ala
65 70 75 80
Ser Ser Ile Ala Glu Gln Leu Ala Cys Ala Asp Ile Ile Lys Glu Asp
85 90 95
Ile Ser Glu Tyr Ile Lys Thr Thr Pro Arg Leu Lys Arg Phe Ile Lys
100 105 110
Lys Tyr Arg Asn Arg Ser Asp Thr Arg Ile Ser Arg Asp Thr Glu Lys
115 120 125
Leu Lys Ile Ala Leu Ala Lys Gly Ile Asp Tyr Glu Tyr Ile Lys Asp
130 135 140
Ala Cys
145

<210> 229
<211> 2535
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(2535)

<400> 229
atg gat gcc aac gta gta tca tct tct act att gca acg tat ata gac 48
Met Asp Ala Asn Val Val Ser Ser Ser Thr Ile Ala Thr Tyr Ile Asp
1 5 10 15
gct tta gcg aag aat gct tca gaa tta gaa cag agg tct acc gca tac 96
Ala Leu Ala Lys Asn Ala Ser Glu Leu Glu Gln Arg Ser Thr Ala Tyr
20 25 30
gaa ata aat aat gaa ttg gaa cta gta ttt att aag ccg cca tta att 144
Glu Ile Asn Asn Glu Leu Glu Leu Val Phe Ile Lys Pro Pro Leu Ile
35 40 45
act ttg aca aat gta gtg aat atc tct acg att cag gaa tcg ttt att 192
Thr Leu Thr Asn Val Val Asn Ile Ser Thr Ile Gln Glu Ser Phe Ile

50	55	60	
cga ttt acc gtt act aat aag gaa ggt gtc aaa att aga act aag att	240		
Arg Phe Thr Val Thr Asn Lys Glu Gly Val Lys Ile Arg Thr Lys Ile			
65 70 75 80			
cca tta tct aag gta cat ggt cta gat gta aaa aat gta cag tta gta	288		
Pro Leu Ser Lys Val His Gly Leu Asp Val Lys Asn Val Gln Leu Val			
85 90 95			
gat gct ata gat aac ata gtt tgg gaa aag aaa tca tta gtg acg gaa	336		
Asp Ala Ile Asp Asn Ile Val Trp Glu Lys Lys Ser Leu Val Thr Glu			
100 105 110			
aat cgt ctt cac aaa gaa tgc ttg ttg aga cta tcg aca gag gaa cgt	384		
Asn Arg Leu His Lys Glu Cys Leu Leu Arg Leu Ser Thr Glu Glu Arg			
115 120 125			
cat ata ttt ttg gat tac aag aaa tat gga tcc tct atc cga cta gaa	432		
His Ile Phe Leu Asp Tyr Lys Lys Tyr Gly Ser Ser Ile Arg Leu Glu			
130 135 140			
tta gtc aat ctt att caa gca aaa aca aaa aac ttt acg ata gac ttt	480		
Leu Val Asn Leu Ile Gln Ala Lys Thr Lys Asn Phe Thr Ile Asp Phe			
145 150 155 160			
aag cta aaa tat ttt cta gga tcc ggt gcc caa tct aaa agt tct ttg	528		
Lys Leu Lys Tyr Phe Leu Gly Ser Gly Ala Gln Ser Lys Ser Ser Leu			
165 170 175			
ttg cac gct att aat cat cca aag tca agg cct aat aca tct ctg gaa	576		
Leu His Ala Ile Asn His Pro Lys Ser Arg Pro Asn Thr Ser Leu Glu			
180 185 190			
ata gaa ttc aca cct aga gac aat gaa aca gtt cca tat gat gaa cta	624		
Ile Glu Phe Thr Pro Arg Asp Asn Glu Thr Val Pro Tyr Asp Glu Leu			
195 200 205			
ata aag gaa ttg acg act ctc tcg cgt cat ata ttt atg gct tct cca	672		
Ile Lys Glu Leu Thr Thr Leu Ser Arg His Ile Phe Met Ala Ser Pro			
210 215 220			
gag aat gta att ctt tct ccg cct att aac gcg cct ata aaa acc ttt	720		
Glu Asn Val Ile Leu Ser Pro Pro Ile Asn Ala Pro Ile Lys Thr Phe			
225 230 235 240			
atg ttg cct aaa caa gat ata gta ggt ttg gat ctg gaa aat cta tat	768		
Met Leu Pro Lys Gln Asp Ile Val Gly Leu Asp Leu Glu Asn Leu Tyr			
245 250 255			
gcc gta act aag act gac ggc att cct ata act atc aga gtt aca tca	816		
Ala Val Thr Lys Thr Asp Gly Ile Pro Ile Thr Ile Arg Val Thr Ser			
260 265 270			
aac ggg ttg tat tgt tat ttt aca cat ctt ggt tat att att aga tat	864		
Asn Gly Leu Tyr Cys Tyr Phe Thr His Leu Gly Tyr Ile Ile Arg Tyr			
275 280 285			
cct gtt aag aga ata ata gat tcc gaa gta gta gtc ttt ggt gag gca	912		

Pro	Val	Lys	Arg	Ile	Ile	Asp	Ser	Glu	Val	Val	Val	Phe	Gly	Glu	Ala		
290						295					300						
gtt	aag	gat	aag	aac	tgg	act	gta	tat	ctc	att	aag	cta	ata	gag	ccc	960	
Val	Lys	Asp	Lys	Asn	Trp	Thr	Val	Tyr	Leu	Ile	Lys	Leu	Ile	Glu	Pro		
305					310					315					320		
gtg	aat	gct	atc	agt	gat	aga	cta	gaa	gaa	agt	aag	tat	ggt	gaa	tct	1008	
Val	Asn	Ala	Ile	Ser	Asp	Arg	Leu	Glu	Glu	Ser	Lys	Tyr	Val	Glu	Ser		
				325					330					335			
aaa	cta	gtg	gat	att	tgt	gat	cgg	ata	gta	ttc	aag	tca	aag	aaa	tac	1056	
Lys	Leu	Val	Asp	Ile	Cys	Asp	Arg	Ile	Val	Phe	Lys	Ser	Lys	Lys	Tyr		
			340					345					350				
gaa	ggt	ccg	ttt	act	aca	act	agt	gaa	gtc	gtc	gat	atg	tta	tct	aca	1104	
Glu	Gly	Pro	Phe	Thr	Thr	Thr	Ser	Glu	Val	Val	Asp	Met	Leu	Ser	Thr		
			355				360					365					
tat	tta	cca	aag	caa	cca	gaa	ggt	ggt	att	ctg	ttc	tat	tca	aag	gga	1152	
Tyr	Leu	Pro	Lys	Gln	Pro	Glu	Gly	Val	Ile	Leu	Phe	Tyr	Ser	Lys	Gly		
	370					375					380						
cct	aaa	tct	aac	att	gat	ttt	aaa	att	aaa	aag	gaa	aat	act	ata	gac	1200	
Pro	Lys	Ser	Asn	Ile	Asp	Phe	Lys	Ile	Lys	Lys	Glu	Asn	Thr	Ile	Asp		
385					390					395					400		
caa	act	gca	aat	gta	gta	ttt	agg	tac	atg	tcc	agt	gaa	cca	att	atc	1248	
Gln	Thr	Ala	Asn	Val	Val	Phe	Arg	Tyr	Met	Ser	Ser	Glu	Pro	Ile	Ile		
				405					410					415			
ttt	gga	gaa	tcg	tct	atc	ttt	gta	gag	tat	aag	aaa	ttt	agc	aac	gat	1296	
Phe	Gly	Glu	Ser	Ser	Ile	Phe	Val	Glu	Tyr	Lys	Lys	Phe	Ser	Asn	Asp		
			420					425					430				
aaa	ggc	ttt	cct	aaa	gaa	tat	ggt	tct	ggt	aag	att	gtg	tta	tat	aac	1344	
Lys	Gly	Phe	Pro	Lys	Glu	Tyr	Gly	Ser	Gly	Lys	Ile	Val	Leu	Tyr	Asn		
		435					440					445					
ggc	ggt	aat	tat	cta	aat	aat	atc	tat	tgt	ttg	gaa	tat	att	aat	aca	1392	
Gly	Val	Asn	Tyr	Leu	Asn	Asn	Ile	Tyr	Cys	Leu	Glu	Tyr	Ile	Asn	Thr		
	450					455					460						
cat	aat	gaa	gtg	ggt	att	aag	tcc	gtg	ggt	gta	cct	att	aag	ttt	ata	1440	
His	Asn	Glu	Val	Gly	Ile	Lys	Ser	Val	Val	Val	Pro	Ile	Lys	Phe	Ile		
465					470					475					480		
gca	gaa	ttc	tta	ggt	aat	gga	gaa	ata	ctt	aaa	cct	aga	att	gat	aaa	1488	
Ala	Glu	Phe	Leu	Val	Asn	Gly	Glu	Ile	Leu	Lys	Pro	Arg	Ile	Asp	Lys		
				485					490					495			
acc	atg	aaa	tat	att	aac	tca	gaa	gat	tat	tat	gga	aat	caa	cat	aat	1536	
Thr	Met	Lys	Tyr	Ile	Asn	Ser	Glu	Asp	Tyr	Tyr	Gly	Asn	Gln	His	Asn		
			500					505					510				
atc	ata	gtc	gaa	cat	tta	aga	gat	caa	agc	atc	aaa	ata	gga	gat	atc	1584	
Ile	Ile	Val	Glu	His	Leu	Arg	Asp	Gln	Ser	Ile	Lys	Ile	Gly	Asp	Ile		
		515					520					525					

ttt aac gag gat aaa cta tcg gat gtg gga cat caa tac gcc aat aat.	1632
Phe Asn Glu Asp Lys Leu Ser Asp Val Gly His Gln Tyr Ala Asn Asn	
530 535 540	
gat aaa ttt aga tta aat cca gaa gtt agt tat ttt acg aat aaa cga	1680
Asp Lys Phe Arg Leu Asn Pro Glu Val Ser Tyr Phe Thr Asn Lys Arg	
545 550 555 560	
act aga gga ccg ttg gga att tta tca aac tac gtc aag act ctt ctt	1728
Thr Arg Gly Pro Leu Gly Ile Leu Ser Asn Tyr Val Lys Thr Leu Leu	
565 570 575	
att tct atg tat tgt tcc aaa aca ttt tta gac gat tcc aac aaa cga	1776
Ile Ser Met Tyr Cys Ser Lys Thr Phe Leu Asp Asp Ser Asn Lys Arg	
580 585 590	
aag gta ttg gcg att gat ttt gga aac ggt gct gac ctg gaa aaa tac	1824
Lys Val Leu Ala Ile Asp Phe Gly Asn Gly Ala Asp Leu Glu Lys Tyr	
595 600 605	
ttt tat gga gag att gcg tta ttg gta gcg acg gat ccg gat gct gat	1872
Phe Tyr Gly Glu Ile Ala Leu Leu Val Ala Thr Asp Pro Asp Ala Asp	
610 615 620	
gct ata gct aga gga aat gaa aga tac aac aaa tta aac tct gga att	1920
Ala Ile Ala Arg Gly Asn Glu Arg Tyr Asn Lys Leu Asn Ser Gly Ile	
625 630 635 640	
aaa acc aag tac tac aaa ttt gac tac att cag gaa act att cga tcc	1968
Lys Thr Lys Tyr Tyr Lys Phe Asp Tyr Ile Gln Glu Thr Ile Arg Ser	
645 650 655	
gat aca ttt gtc tct agt gtc aga gaa gta ttc tat ttt gga aag ttt	2016
Asp Thr Phe Val Ser Ser Val Arg Glu Val Phe Tyr Phe Gly Lys Phe	
660 665 670	
aat atc atc gac tgg cag ttt gct atc cat tat tct ttt cat ccg aga	2064
Asn Ile Ile Asp Trp Gln Phe Ala Ile His Tyr Ser Phe His Pro Arg	
675 680 685	
cat tat gct acc gtc atg aat aac tta tcc gaa cta act gct tct gga	2112
His Tyr Ala Thr Val Met Asn Asn Leu Ser Glu Leu Thr Ala Ser Gly	
690 695 700	
ggc aag gta tta atc act acc atg gac gga gac aaa tta tca aaa tta	2160
Gly Lys Val Leu Ile Thr Thr Met Asp Gly Asp Lys Leu Ser Lys Leu	
705 710 715 720	
aca gat aaa aag act ttt ata att cat aag aat tta cct agt agc gaa	2208
Thr Asp Lys Lys Thr Phe Ile Ile His Lys Asn Leu Pro Ser Ser Glu	
725 730 735	
aac tat atg tct gta gaa aaa ata gct gat gat aga ata gtg gta tat	2256
Asn Tyr Met Ser Val Glu Lys Ile Ala Asp Asp Arg Ile Val Val Tyr	
740 745 750	
aat cca tca aca atg tct act cca atg act gaa tac att atc aaa aag	2304
Asn Pro Ser Thr Met Ser Thr Pro Met Thr Glu Tyr Ile Ile Lys Lys	
755 760 765	

aac gat ata gtc aga gtg ttt aac gaa tac gga ttt gtt ctt gta gat	2352
Asn Asp Ile Val Arg Val Phe Asn Glu Tyr Gly Phe Val Leu Val Asp	
770 775 780	
aac gtt gat ttc gct aca att ata gaa cga agt aaa aag ttt att aat	2400
Asn Val Asp Phe Ala Thr Ile Ile Glu Arg Ser Lys Lys Phe Ile Asn	
785 790 795 800	
ggc gca tct aca atg gaa gat aga ccg tct aca aaa aac ttt ttc gaa	2448
Gly Ala Ser Thr Met Glu Asp Arg Pro Ser Thr Lys Asn Phe Phe Glu	
805 810 815	
cta aat aga gga gcc att aaa tgt gaa ggt tta gat gtc gaa gac tta	2496
Leu Asn Arg Gly Ala Ile Lys Cys Glu Gly Leu Asp Val Glu Asp Leu	
820 825 830	
ctt agt tac tat gtt gtt tat gtc ttt tct aag cgg taa	2535
Leu Ser Tyr Tyr Val Val Tyr Val Phe Ser Lys Arg *	
835 840	

<210> 230
 <211> 844
 <212> PRT
 <213> vaccinia virus

<400> 230

Met Asp Ala Asn Val Val Ser Ser Ser Thr Ile Ala Thr Tyr Ile Asp	
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Ala Leu Ala Lys Asn Ala Ser Glu Leu Glu Gln Arg Ser Thr Ala Tyr	
20 25 30	
Glu Ile Asn Asn Glu Leu Glu Leu Val Phe Ile Lys Pro Pro Leu Ile	
35 40 45	
Thr Leu Thr Asn Val Val Asn Ile Ser Thr Ile Gln Glu Ser Phe Ile	
50 55 60	
Arg Phe Thr Val Thr Asn Lys Glu Gly Val Lys Ile Arg Thr Lys Ile	
65 70 75 80	
Pro Leu Ser Lys Val His Gly Leu Asp Val Lys Asn Val Gln Leu Val	
85 90 95	
Asp Ala Ile Asp Asn Ile Val Trp Glu Lys Lys Ser Leu Val Thr Glu	
100 105 110	
Asn Arg Leu His Lys Glu Cys Leu Leu Arg Leu Ser Thr Glu Glu Arg	
115 120 125	
His Ile Phe Leu Asp Tyr Lys Lys Tyr Gly Ser Ser Ile Arg Leu Glu	
130 135 140	
Leu Val Asn Leu Ile Gln Ala Lys Thr Lys Asn Phe Thr Ile Asp Phe	
145 150 155 160	
Lys Leu Lys Tyr Phe Leu Gly Ser Gly Ala Gln Ser Lys Ser Ser Leu	
165 170 175	
Leu His Ala Ile Asn His Pro Lys Ser Arg Pro Asn Thr Ser Leu Glu	
180 185 190	
Ile Glu Phe Thr Pro Arg Asp Asn Glu Thr Val Pro Tyr Asp Glu Leu	
195 200 205	
Ile Lys Glu Leu Thr Thr Leu Ser Arg His Ile Phe Met Ala Ser Pro	
210 215 220	
Glu Asn Val Ile Leu Ser Pro Pro Ile Asn Ala Pro Ile Lys Thr Phe	
225 230 235 240	
Met Leu Pro Lys Gln Asp Ile Val Gly Leu Asp Leu Glu Asn Leu Tyr	

Ala	Val	Thr	Lys	Thr	Asp	Gly	Ile	Pro	Ile	Thr	Ile	Arg	Val	Thr	Ser
			260					265					270		
Asn	Gly	Leu	Tyr	Cys	Tyr	Phe	Thr	His	Leu	Gly	Tyr	Ile	Ile	Arg	Tyr
		275					280					285			
Pro	Val	Lys	Arg	Ile	Ile	Asp	Ser	Glu	Val	Val	Val	Phe	Gly	Glu	Ala
	290					295					300				
Val	Lys	Asp	Lys	Asn	Trp	Thr	Val	Tyr	Leu	Ile	Lys	Leu	Ile	Glu	Pro
305					310					315					320
Val	Asn	Ala	Ile	Ser	Asp	Arg	Leu	Glu	Glu	Ser	Lys	Tyr	Val	Glu	Ser
				325					330					335	
Lys	Leu	Val	Asp	Ile	Cys	Asp	Arg	Ile	Val	Phe	Lys	Ser	Lys	Lys	Tyr
			340					345					350		
Glu	Gly	Pro	Phe	Thr	Thr	Thr	Ser	Glu	Val	Val	Asp	Met	Leu	Ser	Thr
		355					360					365			
Tyr	Leu	Pro	Lys	Gln	Pro	Glu	Gly	Val	Ile	Leu	Phe	Tyr	Ser	Lys	Gly
	370					375					380				
Pro	Lys	Ser	Asn	Ile	Asp	Phe	Lys	Ile	Lys	Lys	Glu	Asn	Thr	Ile	Asp
385					390					395					400
Gln	Thr	Ala	Asn	Val	Val	Phe	Arg	Tyr	Met	Ser	Ser	Glu	Pro	Ile	Ile
				405					410					415	
Phe	Gly	Glu	Ser	Ser	Ile	Phe	Val	Glu	Tyr	Lys	Lys	Phe	Ser	Asn	Asp
			420					425					430		
Lys	Gly	Phe	Pro	Lys	Glu	Tyr	Gly	Ser	Gly	Lys	Ile	Val	Leu	Tyr	Asn
		435					440					445			
Gly	Val	Asn	Tyr	Leu	Asn	Asn	Ile	Tyr	Cys	Leu	Glu	Tyr	Ile	Asn	Thr
	450					455					460				
His	Asn	Glu	Val	Gly	Ile	Lys	Ser	Val	Val	Val	Pro	Ile	Lys	Phe	Ile
465					470					475					480
Ala	Glu	Phe	Leu	Val	Asn	Gly	Glu	Ile	Leu	Lys	Pro	Arg	Ile	Asp	Lys
				485					490					495	
Thr	Met	Lys	Tyr	Ile	Asn	Ser	Glu	Asp	Tyr	Tyr	Gly	Asn	Gln	His	Asn
			500					505					510		
Ile	Ile	Val	Glu	His	Leu	Arg	Asp	Gln	Ser	Ile	Lys	Ile	Gly	Asp	Ile
		515					520					525			
Phe	Asn	Glu	Asp	Lys	Leu	Ser	Asp	Val	Gly	His	Gln	Tyr	Ala	Asn	Asn
	530					535					540				
Asp	Lys	Phe	Arg	Leu	Asn	Pro	Glu	Val	Ser	Tyr	Phe	Thr	Asn	Lys	Arg
545					550					555					560
Thr	Arg	Gly	Pro	Leu	Gly	Ile	Leu	Ser	Asn	Tyr	Val	Lys	Thr	Leu	Leu
				565					570					575	
Ile	Ser	Met	Tyr	Cys	Ser	Lys	Thr	Phe	Leu	Asp	Asp	Ser	Asn	Lys	Arg
			580					585					590		
Lys	Val	Leu	Ala	Ile	Asp	Phe	Gly	Asn	Gly	Ala	Asp	Leu	Glu	Lys	Tyr
		595					600					605			
Phe	Tyr	Gly	Glu	Ile	Ala	Leu	Leu	Val	Ala	Thr	Asp	Pro	Asp	Ala	Asp
	610					615					620				
Ala	Ile	Ala	Arg	Gly	Asn	Glu	Arg	Tyr	Asn	Lys	Leu	Asn	Ser	Gly	Ile
625					630					635					640
Lys	Thr	Lys	Tyr	Tyr	Lys	Phe	Asp	Tyr	Ile	Gln	Glu	Thr	Ile	Arg	Ser
				645					650					655	
Asp	Thr	Phe	Val	Ser	Ser	Val	Arg	Glu	Val	Phe	Tyr	Phe	Gly	Lys	Phe
			660					665					670		
Asn	Ile	Ile	Asp	Trp	Gln	Phe	Ala	Ile	His	Tyr	Ser	Phe	His	Pro	Arg
		675					680					685			
His	Tyr	Ala	Thr	Val	Met	Asn	Asn	Leu	Ser	Glu	Leu	Thr	Ala	Ser	Gly
	690					695					700				
Gly	Lys	Val	Leu	Ile	Thr	Thr	Met	Asp	Gly	Asp	Lys	Leu	Ser	Lys	Leu
705					710					715					720

Thr	Asp	Lys	Lys	Thr	Phe	Ile	Ile	His	Lys	Asn	Leu	Pro	Ser	Ser	Glu	
				725					730					735		
Asn	Tyr	Met	Ser	Val	Glu	Lys	Ile	Ala	Asp	Asp	Arg	Ile	Val	Val	Tyr	
				740				745					750			
Asn	Pro	Ser	Thr	Met	Ser	Thr	Pro	Met	Thr	Glu	Tyr	Ile	Ile	Lys	Lys	
				755				760					765			
Asn	Asp	Ile	Val	Arg	Val	Phe	Asn	Glu	Tyr	Gly	Phe	Val	Leu	Val	Asp	
				770				775				780				
Asn	Val	Asp	Phe	Ala	Thr	Ile	Ile	Glu	Arg	Ser	Lys	Lys	Phe	Ile	Asn	
					790					795					800	
Gly	Ala	Ser	Thr	Met	Glu	Asp	Arg	Pro	Ser	Thr	Lys	Asn	Phe	Phe	Glu	
				805					810					815		
Leu	Asn	Arg	Gly	Ala	Ile	Lys	Cys	Glu	Gly	Leu	Asp	Val	Glu	Asp	Leu	
				820				825					830			
Leu	Ser	Tyr	Tyr	Val	Val	Tyr	Val	Phe	Ser	Lys	Arg					
				835				840								

<210> 231
 <211> 438
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(438)

<400> 231																
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Met	Ser	Ile	Asn	Ile	Asp	Ile	Lys	Lys	Ile	Thr	Asp	Leu	Leu	Asn	Ser	
1				5					10					15		
agt	att	tta	ttc	cca	gat	gat	gtg	caa	gaa	ctt	ctt	cga	gag	aaa	tat	96
Ser	Ile	Leu	Phe	Pro	Asp	Asp	Val	Gln	Glu	Leu	Leu	Arg	Glu	Lys	Tyr	
			20					25					30			
ata	gta	tta	gaa	aga	aaa	tca	aat	ggg	aca	cct	aca	gta	gct	cac	atc	144
Ile	Val	Leu	Glu	Arg	Lys	Ser	Asn	Gly	Thr	Pro	Thr	Val	Ala	His	Ile	
			35				40					45				
tat	aag	aca	atg	gct	aga	ttt	gat	aat	aag	agt	ata	tat	aga	atc	gcc	192
Tyr	Lys	Thr	Met	Ala	Arg	Phe	Asp	Asn	Lys	Ser	Ile	Tyr	Arg	Ile	Ala	
	50					55					60					
aag	ttt	tta	ttt	atg	aac	agg	cca	gat	ggt	atc	aaa	ctt	tta	ttt	tta	240
Lys	Phe	Leu	Phe	Met	Asn	Arg	Pro	Asp	Val	Ile	Lys	Leu	Leu	Phe	Leu	
	65				70					75					80	
gaa	gac	gta	gaa	cct	ctg	tta	ccc	gac	aaa	agt	att	aat	ata	tct	att	288
Glu	Asp	Val	Glu	Pro	Leu	Leu	Pro	Asp	Lys	Ser	Ile	Asn	Ile	Ser	Ile	
				85					90					95		
aac	aat	aca	gag	tat	cca	cag	ttg	gaa	ggg	cct	ata	gga	aca	aaa	atc	336
Asn	Asn	Thr	Glu	Tyr	Pro	Gln	Leu	Glu	Gly	Pro	Ile	Gly	Thr	Lys	Ile	
			100					105					110			
gct	cta	ttg	gaa	tta	ttt	aat	gca	ttt	aga	acg	ggg	ata	tca	gaa	ccc	384
Ala	Leu	Leu	Glu	Leu	Phe	Asn	Ala	Phe	Arg	Thr	Gly	Ile	Ser	Glu	Pro	
			115				120					125				

ata cca tat tat tat tta ccg ctt aga aaa gac ata aac aac ata gta 432
 Ile Pro Tyr Tyr Tyr Leu Pro Leu Arg Lys Asp Ile Asn Asn Ile Val
 130 135 140

act aag 438
 Thr Lys
 145

<210> 232
 <211> 146
 <212> PRT
 <213> vaccinia virus

<400> 232
 Met Ser Ile Asn Ile Asp Ile Lys Lys Ile Thr Asp Leu Leu Asn Ser
 1 5 10 15
 Ser Ile Leu Phe Pro Asp Asp Val Gln Glu Leu Leu Arg Glu Lys Tyr
 20 25 30
 Ile Val Leu Glu Arg Lys Ser Asn Gly Thr Pro Thr Val Ala His Ile
 35 40 45
 Tyr Lys Thr Met Ala Arg Phe Asp Asn Lys Ser Ile Tyr Arg Ile Ala
 50 55 60
 Lys Phe Leu Phe Met Asn Arg Pro Asp Val Ile Lys Leu Leu Phe Leu
 65 70 75 80
 Glu Asp Val Glu Pro Leu Leu Pro Asp Lys Ser Ile Asn Ile Ser Ile
 85 90 95
 Asn Asn Thr Glu Tyr Pro Gln Leu Glu Gly Pro Ile Gly Thr Lys Ile
 100 105 110
 Ala Leu Leu Glu Leu Phe Asn Ala Phe Arg Thr Gly Ile Ser Glu Pro
 115 120 125
 Ile Pro Tyr Tyr Tyr Leu Pro Leu Arg Lys Asp Ile Asn Asn Ile Val
 130 135 140
 Thr Lys
 145

<210> 233
 <211> 711
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(711)

<400> 233
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 Met Asp Ile Phe Ile Val Lys Asp Asn Lys Tyr Pro Lys Val Asp Asn
 1 5 10 15
 gac gat aac gaa gta ttt ata ctt tta gga aat cac aat gac ttt atc 96
 Asp Asp Asn Glu Val Phe Ile Leu Leu Gly Asn His Asn Asp Phe Ile
 20 25 30
 aga tta aaa tta aca aaa tta aag gag cat gta ttt ttt tct gaa tat 144
 Arg Leu Lys Leu Thr Lys Leu Lys Glu His Val Phe Phe Ser Glu Tyr
 35 40 45

att gtg act cca gat aca tat gga tct tta tgc gtc gaa tta aat ggg	192
Ile Val Thr Pro Asp Thr Tyr Gly Ser Leu Cys Val Glu Leu Asn Gly	
50 55 60	
tct agt ttt cag cac ggc ggt aga tat ata gag gtg gag gaa ttt ata	240
Ser Ser Phe Gln His Gly Gly Arg Tyr Ile Glu Val Glu Glu Phe Ile	
65 70 75 80	
gat gct gga aga caa gtt aga tgg tgt tct aca tcc aat cat ata tct	288
Asp Ala Gly Arg Gln Val Arg Trp Cys Ser Thr Ser Asn His Ile Ser	
85 90 95	
aaa gat ata ccc gaa gat atg cac act gat aaa ttt gtc att tat gat	336
Lys Asp Ile Pro Glu Asp Met His Thr Asp Lys Phe Val Ile Tyr Asp	
100 105 110	
att tat acg ttt gat tct ttc aag aat aaa cga ttg gta ttc gta cag	384
Ile Tyr Thr Phe Asp Ser Phe Lys Asn Lys Arg Leu Val Phe Val Gln	
115 120 125	
gtg cct cca tca tta gga gat gat agc tat ttg act aat ccg tta ttg	432
Val Pro Pro Ser Leu Gly Asp Asp Ser Tyr Leu Thr Asn Pro Leu Leu	
130 135 140	
tct ccg tat tat cgt aat tca gta gcc aga caa atg gtc aat gat atg	480
Ser Pro Tyr Tyr Arg Asn Ser Val Ala Arg Gln Met Val Asn Asp Met	
145 150 155 160	
att ttt aat caa gat tca ttt tta aaa tat tta tta gaa cat ctg att	528
Ile Phe Asn Gln Asp Ser Phe Leu Lys Tyr Leu Leu Glu His Leu Ile	
165 170 175	
aga agc cac tat aga gtt tct aaa cat ata aca ata gtt aga tac aag	576
Arg Ser His Tyr Arg Val Ser Lys His Ile Thr Ile Val Arg Tyr Lys	
180 185 190	
gat acc gaa gaa tta aat cta acg aga ata tgt tat aat aga gat aag	624
Asp Thr Glu Glu Leu Asn Leu Thr Arg Ile Cys Tyr Asn Arg Asp Lys	
195 200 205	
ttt aag gcg ttt gta ttc gct tgg ttt aac ggc gtt tct gaa aat gaa	672
Phe Lys Ala Phe Val Phe Ala Trp Phe Asn Gly Val Ser Glu Asn Glu	
210 215 220	
aag gta cta gat acg tat aaa aag gta tct aat ttg ata	711
Lys Val Leu Asp Thr Tyr Lys Lys Val Ser Asn Leu Ile	
225 230 235	

<210> 234

<211> 237

<212> PRT

<213> vaccinia virus

<400> 234

Met Asp Ile Phe Ile Val Lys Asp Asn Lys Tyr Pro Lys Val Asp Asn	
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Asp Asp Asn Glu Val Phe Ile Leu Leu Gly Asn His Asn Asp Phe Ile	

tca cca aat ttt aca aaa aaa tca att aag gag ata gct tca tct ata	288
Ser Pro Asn Phe Thr Lys Lys Ser Ile Lys Glu Ile Ala Ser Ser Ile	
85 90 95	
tct aga tta acc gga gta att gat tat aaa ggt tat aac ctt aat ata	336
Ser Arg Leu Thr Gly Val Ile Asp Tyr Lys Gly Tyr Asn Leu Asn Ile	
100 105 110	
ata gac ggg gtt ata ccc tgg aat tat tac tta agt tgt aaa tta gga	384
Ile Asp Gly Val Ile Pro Trp Asn Tyr Tyr Leu Ser Cys Lys Leu Gly	
115 120 125	
gaa aca aaa agt cac gcg atc tac tgg gat aag att tcc aag tta ctg	432
Glu Thr Lys Ser His Ala Ile Tyr Trp Asp Lys Ile Ser Lys Leu Leu	
130 135 140	
ctg cag cat ata act aaa cac gtt agt gtt ctt tat tgt ttg ggt aaa	480
Leu Gln His Ile Thr Lys His Val Ser Val Leu Tyr Cys Leu Gly Lys	
145 150 155 160	
aca gat ttc tcg aat ata cgg gcc aag tta gaa tcc ccg gta act acc	528
Thr Asp Phe Ser Asn Ile Arg Ala Lys Leu Glu Ser Pro Val Thr Thr	
165 170 175	
ata gtc gga tat cat cca gcg gct aga gac cgc caa ttc gag aaa gat	576
Ile Val Gly Tyr His Pro Ala Ala Arg Asp Arg Gln Phe Glu Lys Asp	
180 185 190	
aga tca ttt gaa att atc aac gtt tta ctg gaa tta gac aac aag gca	624
Arg Ser Phe Glu Ile Ile Asn Val Leu Leu Glu Leu Asp Asn Lys Ala	
195 200 205	
cct ata aat tgg gct caa ggg ttt att tat taa	657
Pro Ile Asn Trp Ala Gln Gly Phe Ile Tyr *	
210 215	

<210> 236
 <211> 218
 <212> PRT
 <213> vaccinia virus

<400> 236
Met Asn Ser Val Thr Val Ser His Ala Pro Tyr Thr Ile Thr Tyr His
1 5 10 15
Asp Asp Trp Glu Pro Val Met Ser Gln Leu Val Glu Phe Tyr Asn Glu
20 25 30
Val Ala Ser Trp Leu Leu Arg Asp Glu Thr Ser Pro Ile Pro Asp Lys
35 40 45
Phe Phe Ile Gln Leu Lys Gln Pro Leu Arg Asn Lys Arg Val Cys Val
50 55 60
Cys Gly Ile Asp Pro Tyr Pro Lys Asp Gly Thr Gly Val Pro Phe Glu
65 70 75 80
Ser Pro Asn Phe Thr Lys Lys Ser Ile Lys Glu Ile Ala Ser Ser Ile
85 90 95
Ser Arg Leu Thr Gly Val Ile Asp Tyr Lys Gly Tyr Asn Leu Asn Ile
100 105 110
Ile Asp Gly Val Ile Pro Trp Asn Tyr Tyr Leu Ser Cys Lys Leu Gly
115 120 125

Glu	Thr	Lys	Ser	His	Ala	Ile	Tyr	Trp	Asp	Lys	Ile	Ser	Lys	Leu	Leu	
130						135					140					
Leu	Gln	His	Ile	Thr	Lys	His	Val	Ser	Val	Leu	Tyr	Cys	Leu	Gly	Lys	
145					150					155					160	
Thr	Asp	Phe	Ser	Asn	Ile	Arg	Ala	Lys	Leu	Glu	Ser	Pro	Val	Thr	Thr	
				165					170					175		
Ile	Val	Gly	Tyr	His	Pro	Ala	Ala	Arg	Asp	Arg	Gln	Phe	Glu	Lys	Asp	
			180					185					190			
Arg	Ser	Phe	Glu	Ile	Ile	Asn	Val	Leu	Leu	Glu	Leu	Asp	Asn	Lys	Ala	
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Pro	Ile	Asn	Trp	Ala	Gln	Gly	Phe	Ile	Tyr							
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<210> 237

<211> 2358

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(2358)

<400> 237

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Met	Asp	Ala	Thr	Ile	Arg	Gly	Asn	Asp	Val	Ile	Phe	Val	Leu	Lys	Thr	
1				5					10					15		
ata	ggt	gtc	cca	tca	gca	tgt	aga	caa	aat	gaa	gat	cca	aga	ttc	gta	96
Ile	Gly	Val	Pro	Ser	Ala	Cys	Arg	Gln	Asn	Glu	Asp	Pro	Arg	Phe	Val	
			20					25					30			
gaa	gca	ttt	aaa	tgc	gac	gag	tta	aaa	aga	tat	att	gag	aat	aat	cca	144
Glu	Ala	Phe	Lys	Cys	Asp	Glu	Leu	Lys	Arg	Tyr	Ile	Glu	Asn	Asn	Pro	
		35				40						45				
gaa	tgt	aca	cta	ttc	gaa	agt	ctt	agg	gat	gag	gaa	gca	tac	tct	ata	192
Glu	Cys	Thr	Leu	Phe	Glu	Ser	Leu	Arg	Asp	Glu	Glu	Ala	Tyr	Ser	Ile	
	50					55				60						
gtc	aga	att	ttc	atg	gat	gta	gat	tta	gac	gcg	tgt	cta	gac	gaa	ata	240
Val	Arg	Ile	Phe	Met	Asp	Val	Asp	Leu	Asp	Ala	Cys	Leu	Asp	Glu	Ile	
	65				70				75						80	
gat	tat	tta	acg	gct	att	caa	gat	ttt	att	atc	gag	gtg	tca	aac	tgt	288
Asp	Tyr	Leu	Thr	Ala	Ile	Gln	Asp	Phe	Ile	Ile	Glu	Val	Ser	Asn	Cys	
			85					90						95		
gta	gct	aga	ttc	gcg	ttt	aca	gaa	tgc	ggt	gcc	att	cat	gaa	aat	gta	336
Val	Ala	Arg	Phe	Ala	Phe	Thr	Glu	Cys	Gly	Ala	Ile	His	Glu	Asn	Val	
			100					105					110			
ata	aaa	tcc	atg	aga	tct	aat	ttt	tca	ttg	act	aag	tct	aca	aat	aga	384
Ile	Lys	Ser	Met	Arg	Ser	Asn	Phe	Ser	Leu	Thr	Lys	Ser	Thr	Asn	Arg	
		115				120						125				
gat	aaa	aca	agt	ttt	cat	att	atc	ttt	tta	gac	acg	tat	acc	act	atg	432
Asp	Lys	Thr	Ser	Phe	His	Ile	Ile	Phe	Leu	Asp	Thr	Tyr	Thr	Thr	Met	
	130					135					140					

gat aca ttg ata gct atg aaa cga aca cta tta gaa tta agt aga tca	480
Asp Thr Leu Ile Ala Met Lys Arg Thr Leu Leu Glu Leu Ser Arg Ser	
145 150 155 160	
tct gaa aat cca cta aca aga tcg ata gac act gcc gta tat agg aga	528
Ser Glu Asn Pro Leu Thr Arg Ser Ile Asp Thr Ala Val Tyr Arg Arg	
165 170 175	
aaa aca act ctt cgg gtt gta ggt act agg aaa aat cca aat tgc gac	576
Lys Thr Thr Leu Arg Val Val Gly Thr Arg Lys Asn Pro Asn Cys Asp	
180 185 190	
act att cat gta atg caa cca ccg cat gat aat ata gaa gat tac cta	624
Thr Ile His Val Met Gln Pro Pro His Asp Asn Ile Glu Asp Tyr Leu	
195 200 205	
ttc act tac gtg gat atg aac aac aat agt tat tac ttt tct cta caa	672
Phe Thr Tyr Val Asp Met Asn Asn Asn Ser Tyr Tyr Phe Ser Leu Gln	
210 215 220	
cga cga ttg gag gat tta gtt cct gat aag tta tgg gaa cca ggg ttt	720
Arg Arg Leu Glu Asp Leu Val Pro Asp Lys Leu Trp Glu Pro Gly Phe	
225 230 235 240	
att tca ttc gaa gac gct ata aaa aga gtt tca aaa ata ttc att aat	768
Ile Ser Phe Glu Asp Ala Ile Lys Arg Val Ser Lys Ile Phe Ile Asn	
245 250 255	
tct ata ata aac ttt aat gat ctc gat gaa aat aat ttt aca acg gta	816
Ser Ile Ile Asn Phe Asn Asp Leu Asp Glu Asn Asn Phe Thr Thr Val	
260 265 270	
cca ctg gtc ata gat tac gta aca cct tgt gca tta tgt aaa aaa cga	864
Pro Leu Val Ile Asp Tyr Val Thr Pro Cys Ala Leu Cys Lys Lys Arg	
275 280 285	
tcg cat aaa cat ccg cat caa cta tcg ttg gaa aat ggt gct att aga	912
Ser His Lys His Pro His Gln Leu Ser Leu Glu Asn Gly Ala Ile Arg	
290 295 300	
att tac aaa act ggt aat cca cat agt tgt aaa gtt aaa att gtt ccg	960
Ile Tyr Lys Thr Gly Asn Pro His Ser Cys Lys Val Lys Ile Val Pro	
305 310 315 320	
ttg gat ggt aat aaa ctg ttt aat att gca caa aga att tta gac act	1008
Leu Asp Gly Asn Lys Leu Phe Asn Ile Ala Gln Arg Ile Leu Asp Thr	
325 330 335	
aac tct gtt tta tta acc gaa cga gga gac cat ata gtt tgg att aat	1056
Asn Ser Val Leu Leu Thr Glu Arg Gly Asp His Ile Val Trp Ile Asn	
340 345 350	
aat tca tgg aaa ttt aac agc gaa gaa ccc ttg ata aca aaa cta att	1104
Asn Ser Trp Lys Phe Asn Ser Glu Glu Pro Leu Ile Thr Lys Leu Ile	
355 360 365	
ttg tca ata aga cat caa cta cct aag gaa tat tca agc gaa tta ctc	1152
Leu Ser Ile Arg His Gln Leu Pro Lys Glu Tyr Ser Ser Glu Leu Leu	

370	375	380	
tgt cca aga aaa cga aag act gta gaa gct aac ata cga gac atg tta Cys Pro Arg Lys Arg Lys Thr Val Glu Ala Asn Ile Arg Asp Met Leu 385 390 395 400			1200
gta gat tca gtg gag acc gat acc tat ccg gat aaa ctt ccg ttt aaa Val Asp Ser Val Glu Thr Asp Thr Tyr Pro Asp Lys Leu Pro Phe Lys 405 410 415			1248
aat ggt gta ttg gac ctg gta gac gga atg ttt tac tct gga gat aat Asn Gly Val Leu Asp Leu Val Asp Gly Met Phe Tyr Ser Gly Asp Asn 420 425 430			1296
gct aaa aaa tat acg tgt act gta tca acc gga ttt aaa ttt gac gat Ala Lys Lys Tyr Thr Cys Thr Val Ser Thr Gly Phe Lys Phe Asp Asp 435 440 445			1344
aca aag ttc gtc gaa gac agt cca gaa atg gaa gag tta atg aat atc Thr Lys Phe Val Glu Asp Ser Pro Glu Met Glu Glu Leu Met Asn Ile 450 455 460			1392
att aac gat atc caa cca tta acg gat gaa aat aag aaa aat aga gag Ile Asn Asp Ile Gln Pro Leu Thr Asp Glu Asn Lys Lys Asn Arg Glu 465 470 475 480			1440
ttg tac gaa aaa act tta tct agt tgt tta tgc ggt gct acc aaa gga Leu Tyr Glu Lys Thr Leu Ser Ser Cys Leu Cys Gly Ala Thr Lys Gly 485 490 495			1488
tgt tta aca ttc ttt ttt gga gaa act gca act gga aag tcg aca acc Cys Leu Thr Phe Phe Phe Gly Glu Thr Ala Thr Gly Lys Ser Thr Thr 500 505 510			1536
aaa cgt ttg tta aag tct gct atc ggt gac ctg ttt gtt gag acg ggt Lys Arg Leu Leu Lys Ser Ala Ile Gly Asp Leu Phe Val Glu Thr Gly 515 520 525			1584
caa aca att tta aca gat gta ttg gat aaa gga cct aat cca ttt atc Gln Thr Ile Leu Thr Asp Val Leu Asp Lys Gly Pro Asn Pro Phe Ile 530 535 540			1632
gct aac atg cat ttg aaa aga tct gta ttc tgt agc gaa cta cct gat Ala Asn Met His Leu Lys Arg Ser Val Phe Cys Ser Glu Leu Pro Asp 545 550 555 560			1680
ttt gcc tgt agt gga tca aag aaa att aga tct gac aat att aaa aag Phe Ala Cys Ser Gly Ser Lys Lys Ile Arg Ser Asp Asn Ile Lys Lys 565 570 575			1728
ttg aca gaa cct tgt gtc att gga aga ccg tgt ttc tcc aat aaa att Leu Thr Glu Pro Cys Val Ile Gly Arg Pro Cys Phe Ser Asn Lys Ile 580 585 590			1776
aat aat aga aac cat gcg aca atc att atc gat act aat tac aaa cct Asn Asn Arg Asn His Ala Thr Ile Ile Ile Asp Thr Asn Tyr Lys Pro 595 600 605			1824
gtt ttt gat agg ata gat aac gca tta atg aga aga att gcc gtc gtg			1872

Val	Phe	Asp	Arg	Ile	Asp	Asn	Ala	Leu	Met	Arg	Arg	Ile	Ala	Val	Val		
610						615						620					
cga	ttc	aga	aca	cac	ttt	tct	caa	cct	tct	ggt	aga	gag	gct	gct	gaa	1920	
Arg	Phe	Arg	Thr	His	Phe	Ser	Gln	Pro	Ser	Gly	Arg	Glu	Ala	Ala	Glu		
625					630					635					640		
aat	aat	gac	gcg	tac	gat	aaa	gtc	aaa	cta	tta	gac	gag	ggg	tta	gat	1968	
Asn	Asn	Asp	Ala	Tyr	Asp	Lys	Val	Lys	Leu	Leu	Asp	Glu	Gly	Leu	Asp		
				645					650					655			
ggt	aaa	ata	caa	aat	aat	aga	tat	aga	ttc	gca	ttt	cta	tac	ttg	ttg	2016	
Gly	Lys	Ile	Gln	Asn	Asn	Arg	Tyr	Arg	Phe	Ala	Phe	Leu	Tyr	Leu	Leu		
			660					665					670				
gtg	aaa	tgg	tac	aga	aaa	tat	cat	gtt	cct	att	atg	aaa	cta	tat	cct	2064	
Val	Lys	Trp	Tyr	Arg	Lys	Tyr	His	Val	Pro	Ile	Met	Lys	Leu	Tyr	Pro		
		675					680					685					
aca	ccg	gaa	gag	att	ccg	gac	ttt	gca	ttc	tat	ctc	aaa	ata	ggt	act	2112	
Thr	Pro	Glu	Glu	Ile	Pro	Asp	Phe	Ala	Phe	Tyr	Leu	Lys	Ile	Gly	Thr		
		690				695					700						
ctg	ttg	gta	tct	agc	tct	gta	aag	cat	att	cca	tta	atg	acg	gac	ctc	2160	
Leu	Leu	Val	Ser	Ser	Ser	Val	Lys	His	Ile	Pro	Leu	Met	Thr	Asp	Leu		
705					710					715					720		
tcc	aaa	aag	gga	tat	ata	ttg	tac	gat	aat	gtg	gtc	act	ctt	ccg	ttg	2208	
Ser	Lys	Lys	Gly	Tyr	Ile	Leu	Tyr	Asp	Asn	Val	Val	Thr	Leu	Pro	Leu		
				725					730					735			
act	act	ttc	caa	cag	aaa	ata	tcc	aag	tat	ttt	aat	tct	aga	cta	ttt	2256	
Thr	Thr	Phe	Gln	Gln	Lys	Ile	Ser	Lys	Tyr	Phe	Asn	Ser	Arg	Leu	Phe		
			740					745					750				
gga	cac	gat	ata	gag	agc	ttc	atc	aat	aga	cat	aag	aaa	ttt	gcc	aat	2304	
Gly	His	Asp	Ile	Glu	Ser	Phe	Ile	Asn	Arg	His	Lys	Lys	Phe	Ala	Asn		
		755					760					765					
gtt	agt	gat	gaa	tat	ctg	caa	tat	ata	ttc	ata	gag	gat	att	tca	tct	2352	
Val	Ser	Asp	Glu	Tyr	Leu	Gln	Tyr	Ile	Phe	Ile	Glu	Asp	Ile	Ser	Ser		
		770				775					780						
ccg	taa															2358	
Pro	*																
785																	

<210> 238
 <211> 785
 <212> PRT
 <213> vaccinia virus

<400> 238
 Met Asp Ala Thr Ile Arg Gly Asn Asp Val Ile Phe Val Leu Lys Thr
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 Ile Gly Val Pro Ser Ala Cys Arg Gln Asn Glu Asp Pro Arg Phe Val
 20 25 30
 Glu Ala Phe Lys Cys Asp Glu Leu Lys Arg Tyr Ile Glu Asn Asn Pro

		35					40					45					
Glu	Cys	Thr	Leu	Phe	Glu	Ser	Leu	Arg	Asp	Glu	Glu	Ala	Tyr	Ser	Ile		
	50					55					60						
Val	Arg	Ile	Phe	Met	Asp	Val	Asp	Leu	Asp	Ala	Cys	Leu	Asp	Glu	Ile		
65					70					75					80		
Asp	Tyr	Leu	Thr	Ala	Ile	Gln	Asp	Phe	Ile	Ile	Glu	Val	Ser	Asn	Cys		
				85					90					95			
Val	Ala	Arg	Phe	Ala	Phe	Thr	Glu	Cys	Gly	Ala	Ile	His	Glu	Asn	Val		
			100					105					110				
Ile	Lys	Ser	Met	Arg	Ser	Asn	Phe	Ser	Leu	Thr	Lys	Ser	Thr	Asn	Arg		
	115					120						125					
Asp	Lys	Thr	Ser	Phe	His	Ile	Ile	Phe	Leu	Asp	Thr	Tyr	Thr	Thr	Met		
	130					135					140						
Asp	Thr	Leu	Ile	Ala	Met	Lys	Arg	Thr	Leu	Leu	Glu	Leu	Ser	Arg	Ser		
145					150					155					160		
Ser	Glu	Asn	Pro	Leu	Thr	Arg	Ser	Ile	Asp	Thr	Ala	Val	Tyr	Arg	Arg		
				165					170					175			
Lys	Thr	Thr	Leu	Arg	Val	Val	Gly	Thr	Arg	Lys	Asn	Pro	Asn	Cys	Asp		
			180				185						190				
Thr	Ile	His	Val	Met	Gln	Pro	Pro	His	Asp	Asn	Ile	Glu	Asp	Tyr	Leu		
	195					200						205					
Phe	Thr	Tyr	Val	Asp	Met	Asn	Asn	Asn	Ser	Tyr	Tyr	Phe	Ser	Leu	Gln		
	210				215						220						
Arg	Arg	Leu	Glu	Asp	Leu	Val	Pro	Asp	Lys	Leu	Trp	Glu	Pro	Gly	Phe		
225					230					235					240		
Ile	Ser	Phe	Glu	Asp	Ala	Ile	Lys	Arg	Val	Ser	Lys	Ile	Phe	Ile	Asn		
			245						250					255			
Ser	Ile	Ile	Asn	Phe	Asn	Asp	Leu	Asp	Glu	Asn	Asn	Phe	Thr	Thr	Val		
			260					265					270				
Pro	Leu	Val	Ile	Asp	Tyr	Val	Thr	Pro	Cys	Ala	Leu	Cys	Lys	Lys	Arg		
	275					280						285					
Ser	His	Lys	His	Pro	His	Gln	Leu	Ser	Leu	Glu	Asn	Gly	Ala	Ile	Arg		
	290					295					300						
Ile	Tyr	Lys	Thr	Gly	Asn	Pro	His	Ser	Cys	Lys	Val	Lys	Ile	Val	Pro		
305					310					315					320		
Leu	Asp	Gly	Asn	Lys	Leu	Phe	Asn	Ile	Ala	Gln	Arg	Ile	Leu	Asp	Thr		
			325						330					335			
Asn	Ser	Val	Leu	Leu	Thr	Glu	Arg	Gly	Asp	His	Ile	Val	Trp	Ile	Asn		
			340					345					350				
Asn	Ser	Trp	Lys	Phe	Asn	Ser	Glu	Glu	Pro	Leu	Ile	Thr	Lys	Leu	Ile		
	355					360						365					
Leu	Ser	Ile	Arg	His	Gln	Leu	Pro	Lys	Glu	Tyr	Ser	Ser	Glu	Leu	Leu		
	370					375					380						
Cys	Pro	Arg	Lys	Arg	Lys	Thr	Val	Glu	Ala	Asn	Ile	Arg	Asp	Met	Leu		
385					390					395				400			
Val	Asp	Ser	Val	Glu	Thr	Asp	Thr	Tyr	Pro	Asp	Lys	Leu	Pro	Phe	Lys		
			405						410					415			
Asn	Gly	Val	Leu	Asp	Leu	Val	Asp	Gly	Met	Phe	Tyr	Ser	Gly	Asp	Asn		
			420					425					430				
Ala	Lys	Lys	Tyr	Thr	Cys	Thr	Val	Ser	Thr	Gly	Phe	Lys	Phe	Asp	Asp		
	435						440					445					
Thr	Lys	Phe	Val	Glu	Asp	Ser	Pro	Glu	Met	Glu	Glu	Leu	Met	Asn	Ile		
	450					455					460						
Ile	Asn	Asp	Ile	Gln	Pro	Leu	Thr	Asp	Glu	Asn	Lys	Lys	Asn	Arg	Glu		
465					470					475					480		
Leu	Tyr	Glu	Lys	Thr	Leu	Ser	Ser	Cys	Leu	Cys	Gly	Ala	Thr	Lys	Gly		
			485						490					495			
Cys	Leu	Thr	Phe	Phe	Gly	Glu	Thr	Ala	Thr	Gly	Lys	Ser	Thr	Thr			
			500				505						510				

Lys Arg Leu Leu Lys Ser Ala Ile Gly Asp Leu Phe Val Glu Thr Gly
 515 520 525
 Gln Thr Ile Leu Thr Asp Val Leu Asp Lys Gly Pro Asn Pro Phe Ile
 530 535 540
 Ala Asn Met His Leu Lys Arg Ser Val Phe Cys Ser Glu Leu Pro Asp
 545 550 555 560
 Phe Ala Cys Ser Gly Ser Lys Lys Ile Arg Ser Asp Asn Ile Lys Lys
 565 570 575
 Leu Thr Glu Pro Cys Val Ile Gly Arg Pro Cys Phe Ser Asn Lys Ile
 580 585 590
 Asn Asn Arg Asn His Ala Thr Ile Ile Ile Asp Thr Asn Tyr Lys Pro
 595 600 605
 Val Phe Asp Arg Ile Asp Asn Ala Leu Met Arg Arg Ile Ala Val Val
 610 615 620
 Arg Phe Arg Thr His Phe Ser Gln Pro Ser Gly Arg Glu Ala Ala Glu
 625 630 635 640
 Asn Asn Asp Ala Tyr Asp Lys Val Lys Leu Leu Asp Glu Gly Leu Asp
 645 650 655
 Gly Lys Ile Gln Asn Asn Arg Tyr Arg Phe Ala Phe Leu Tyr Leu Leu
 660 665 670
 Val Lys Trp Tyr Arg Lys Tyr His Val Pro Ile Met Lys Leu Tyr Pro
 675 680 685
 Thr Pro Glu Glu Ile Pro Asp Phe Ala Phe Tyr Leu Lys Ile Gly Thr
 690 695 700
 Leu Leu Val Ser Ser Ser Val Lys His Ile Pro Leu Met Thr Asp Leu
 705 710 715 720
 Ser Lys Lys Gly Tyr Ile Leu Tyr Asp Asn Val Val Thr Leu Pro Leu
 725 730 735
 Thr Thr Phe Gln Gln Lys Ile Ser Lys Tyr Phe Asn Ser Arg Leu Phe
 740 745 750
 Gly His Asp Ile Glu Ser Phe Ile Asn Arg His Lys Lys Phe Ala Asn
 755 760 765
 Val Ser Asp Glu Tyr Leu Gln Tyr Ile Phe Ile Glu Asp Ile Ser Ser
 770 775 780
 Pro
 785

<210> 239
 <211> 1914
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1914)

<400> 239
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 cca act ata tta cct cat cag tta gct act cta gat tat cta gtt aga 96
 Pro Thr Ile Leu Pro His Gln Leu Ala Thr Leu Asp Tyr Leu Val Arg
 20 25 30

 act atc ata gat gag aac aga agc gtg tta ttg ttc cat att atg gga 144
 Thr Ile Ile Asp Glu Asn Arg Ser Val Leu Leu Phe His Ile Met Gly
 35 40 45

tca ggt aaa aca ata atc gct ttg ttg ttc gcc ttg gta gct tcc aga	192
Ser Gly Lys Thr Ile Ile Ala Leu Leu Phe Ala Leu Val Ala Ser Arg	
50 55 60	
ttt aaa aag gtt tac att cta gtg ccg aac atc aac atc tta aaa att	240
Phe Lys Lys Val Tyr Ile Leu Val Pro Asn Ile Asn Ile Leu Lys Ile	
65 70 75 80	
ttc aat tat aat atg ggt gta gct atg aac ttg ttt aat gac aaa ttc	288
Phe Asn Tyr Asn Met Gly Val Ala Met Asn Leu Phe Asn Asp Lys Phe	
85 90 95	
ata gct gag aat atc ttt att cat tcc aca aca agt ttt tat tct ctt	336
Ile Ala Glu Asn Ile Phe Ile His Ser Thr Thr Ser Phe Tyr Ser Leu	
100 105 110	
aat tat aac gat aac gtc att aat tat aac gga tta tct cgc tac aat	384
Asn Tyr Asn Asp Asn Val Ile Asn Tyr Asn Gly Leu Ser Arg Tyr Asn	
115 120 125	
aac tct att ttt atc gtt gat gag gca cat aat atc ttt ggg aat aat	432
Asn Ser Ile Phe Ile Val Asp Glu Ala His Asn Ile Phe Gly Asn Asn	
130 135 140	
act gga gaa ctt atg acc gtg ata aaa aat aaa aac aag att cct ttt	480
Thr Gly Glu Leu Met Thr Val Ile Lys Asn Lys Asn Lys Ile Pro Phe	
145 150 155 160	
tta cta ttg tct gga tct ccc att act aac aca cct aat act ctg ggt	528
Leu Leu Leu Ser Gly Ser Pro Ile Thr Asn Thr Pro Asn Thr Leu Gly	
165 170 175	
cat att ata gat tta atg tcc gaa gag acg ata gat ttt ggt gaa att	576
His Ile Ile Asp Leu Met Ser Glu Glu Thr Ile Asp Phe Gly Glu Ile	
180 185 190	
att agt cgt ggt aag aaa gta att cag aca ctt ctt aac gaa cgc ggt	624
Ile Ser Arg Gly Lys Lys Val Ile Gln Thr Leu Leu Asn Glu Arg Gly	
195 200 205	
gtg aat gta ctt aag gat ttg ctt aaa gga aga ata tca tat tac gaa	672
Val Asn Val Leu Lys Asp Leu Leu Lys Gly Arg Ile Ser Tyr Tyr Glu	
210 215 220	
atg cct gat aaa gat cta cca acg ata aga tat cac gga cgt aag ttt	720
Met Pro Asp Lys Asp Leu Pro Thr Ile Arg Tyr His Gly Arg Lys Phe	
225 230 235 240	
cta gat act aga gta gta tat tgt cac atg tct aaa ctt caa gag aga	768
Leu Asp Thr Arg Val Val Tyr Cys His Met Ser Lys Leu Gln Glu Arg	
245 250 255	
gat tat atg att act aga cga cag cta tgt tat cat gaa atg ttt gat	816
Asp Tyr Met Ile Thr Arg Arg Gln Leu Cys Tyr His Glu Met Phe Asp	
260 265 270	
aaa aat atg tat aac gtg tca atg gca gta ttg gga caa ctt aat ctg	864
Lys Asn Met Tyr Asn Val Ser Met Ala Val Leu Gly Gln Leu Asn Leu	

275	280	285	
atg aat aat tta gat act tta ttt cag gaa cag gat aag gaa ttg tac			912
Met Asn Asn Leu Asp Thr Leu Phe Gln Glu Gln Asp Lys Glu Leu Tyr			
290	295	300	
cca aat ctg aaa ata aat aat ggc gtg tta tac gga gaa gaa ttg gta			960
Pro Asn Leu Lys Ile Asn Asn Gly Val Leu Tyr Gly Glu Glu Leu Val			
305	310	315	320
acg tta aac att agt tcc aaa ttt aaa tac ttt atc aat cgg ata cag			1008
Thr Leu Asn Ile Ser Ser Lys Phe Lys Tyr Phe Ile Asn Arg Ile Gln			
325	330	335	
aca ctc aac gga aaa cat ttt ata tac ttt tct aat tct aca tat ggc			1056
Thr Leu Asn Gly Lys His Phe Ile Tyr Phe Ser Asn Ser Thr Tyr Gly			
340	345	350	
gga ttg gta att aaa tat atc atg ctc agt aat gga tat tct gaa tat			1104
Gly Leu Val Ile Lys Tyr Ile Met Leu Ser Asn Gly Tyr Ser Glu Tyr			
355	360	365	
aat ggt tct cag gga act aat cca cat atg ata aac ggc aaa cca aaa			1152
Asn Gly Ser Gln Gly Thr Asn Pro His Met Ile Asn Gly Lys Pro Lys			
370	375	380	
aca ttt gct atc gtt act agt aaa atg aaa tcg tct tta gag gat cta			1200
Thr Phe Ala Ile Val Thr Ser Lys Met Lys Ser Ser Leu Glu Asp Leu			
385	390	395	400
tta gat gtg tat aat tct cct gaa aac gat gat ggc agt caa ttg atg			1248
Leu Asp Val Tyr Asn Ser Pro Glu Asn Asp Asp Gly Ser Gln Leu Met			
405	410	415	
ttt ttg ttt tcg tca aac att atg tcc gaa tcc tat act ctg aaa gag			1296
Phe Leu Phe Ser Ser Asn Ile Met Ser Glu Ser Tyr Thr Leu Lys Glu			
420	425	430	
gta agg cat att tgg ttt atg act atc cca gat act ttt tct caa tac			1344
Val Arg His Ile Trp Phe Met Thr Ile Pro Asp Thr Phe Ser Gln Tyr			
435	440	445	
aac caa att ctt gga cga tct att aga aaa ttc tct tac gcc gat att			1392
Asn Gln Ile Leu Gly Arg Ser Ile Arg Lys Phe Ser Tyr Ala Asp Ile			
450	455	460	
tct gaa cca gtt aat gta tat ctt tta gcc gcc gta tat tcc gat ttc			1440
Ser Glu Pro Val Asn Val Tyr Leu Leu Ala Ala Val Tyr Ser Asp Phe			
465	470	475	480
aat gac gaa gtg acg tca tta aac gat tac aca cag gat gaa tta att			1488
Asn Asp Glu Val Thr Ser Leu Asn Asp Tyr Thr Gln Asp Glu Leu Ile			
485	490	495	
aat gtt tta cca ttt gac atc aaa aag ctg tta tat cta aaa ttt aag			1536
Asn Val Leu Pro Phe Asp Ile Lys Lys Leu Leu Tyr Leu Lys Phe Lys			
500	505	510	
acg aaa gaa acg aat aga ata tac tct att ctt caa gag atg tct gaa			1584

Thr	Lys	Glu	Thr	Asn	Arg	Ile	Tyr	Ser	Ile	Leu	Gln	Glu	Met	Ser	Glu		
		515					520					525					
acg	tat	tct	ctt	cca	cca	cat	cca	tca	att	gta	aaa	ggt	tta	ttg	gga	1632	
Thr	Tyr	Ser	Leu	Pro	Pro	His	Pro	Ser	Ile	Val	Lys	Val	Leu	Leu	Gly		
	530					535					540						
gaa	ttg	gtc	aga	caa	ttt	ttt	tat	aat	aat	tct	cgt	att	aag	tat	aac	1680	
Glu	Leu	Val	Arg	Gln	Phe	Phe	Tyr	Asn	Asn	Ser	Arg	Ile	Lys	Tyr	Asn		
545					550					555					560		
gac	tcc	aag	tta	ctt	aaa	atg	gtt	aca	tca	gtt	ata	aaa	aat	aaa	gaa	1728	
Asp	Ser	Lys	Leu	Leu	Lys	Met	Val	Thr	Ser	Val	Ile	Lys	Asn	Lys	Glu		
				565					570					575			
gac	gct	agg	aat	tac	ata	gat	gat	att	gta	aac	ggt	cac	ttc	ttt	gta	1776	
Asp	Ala	Arg	Asn	Tyr	Ile	Asp	Asp	Ile	Val	Asn	Gly	His	Phe	Phe	Val		
			580					585					590				
tcg	aat	aaa	gta	ttt	gat	aaa	tct	ctt	tta	tac	aaa	tac	gaa	aac	gat	1824	
Ser	Asn	Lys	Val	Phe	Asp	Lys	Ser	Leu	Leu	Tyr	Lys	Tyr	Glu	Asn	Asp		
		595					600					605					
att	att	aca	gta	ccg	ttt	aga	ctt	tcc	tac	gaa	cca	ttt	gtt	tggt	gga	1872	
Ile	Ile	Thr	Val	Pro	Phe	Arg	Leu	Ser	Tyr	Glu	Pro	Phe	Val	Trp	Gly		
	610					615					620						
gtt	aac	ttt	cgt	aaa	gaa	tat	aac	gtg	gta	tct	tct	cca	taa			1914	
Val	Asn	Phe	Arg	Lys	Glu	Tyr	Asn	Val	Val	Ser	Ser	Pro	*				
625					630					635							

<210> 240
 <211> 637
 <212> PRT
 <213> vaccinia virus

<400> 240

Met	Asn	Thr	Gly	Ile	Ile	Asp	Leu	Phe	Asp	Asn	His	Val	Asp	Ser	Ile		
1				5					10					15			
Pro	Thr	Ile	Leu	Pro	His	Gln	Leu	Ala	Thr	Leu	Asp	Tyr	Leu	Val	Arg		
			20					25					30				
Thr	Ile	Ile	Asp	Glu	Asn	Arg	Ser	Val	Leu	Leu	Phe	His	Ile	Met	Gly		
		35					40					45					
Ser	Gly	Lys	Thr	Ile	Ile	Ala	Leu	Leu	Phe	Ala	Leu	Val	Ala	Ser	Arg		
	50					55					60						
Phe	Lys	Lys	Val	Tyr	Ile	Leu	Val	Pro	Asn	Ile	Asn	Ile	Leu	Lys	Ile		
65					70					75					80		
Phe	Asn	Tyr	Asn	Met	Gly	Val	Ala	Met	Asn	Leu	Phe	Asn	Asp	Lys	Phe		
			85						90					95			
Ile	Ala	Glu	Asn	Ile	Phe	Ile	His	Ser	Thr	Thr	Ser	Phe	Tyr	Ser	Leu		
			100					105					110				
Asn	Tyr	Asn	Asp	Asn	Val	Ile	Asn	Tyr	Asn	Gly	Leu	Ser	Arg	Tyr	Asn		
		115					120					125					
Asn	Ser	Ile	Phe	Ile	Val	Asp	Glu	Ala	His	Asn	Ile	Phe	Gly	Asn	Asn		
	130					135					140						
Thr	Gly	Glu	Leu	Met	Thr	Val	Ile	Lys	Asn	Lys	Asn	Lys	Ile	Pro	Phe		
145					150					155					160		

Leu	Leu	Leu	Ser	Gly	Ser	Pro	Ile	Thr	Asn	Thr	Pro	Asn	Thr	Leu	Gly
				165					170					175	
His	Ile	Ile	Asp	Leu	Met	Ser	Glu	Glu	Thr	Ile	Asp	Phe	Gly	Glu	Ile
			180					185					190		
Ile	Ser	Arg	Gly	Lys	Lys	Val	Ile	Gln	Thr	Leu	Leu	Asn	Glu	Arg	Gly
		195				200						205			
Val	Asn	Val	Leu	Lys	Asp	Leu	Leu	Lys	Gly	Arg	Ile	Ser	Tyr	Tyr	Glu
	210					215					220				
Met	Pro	Asp	Lys	Asp	Leu	Pro	Thr	Ile	Arg	Tyr	His	Gly	Arg	Lys	Phe
225					230					235					240
Leu	Asp	Thr	Arg	Val	Val	Tyr	Cys	His	Met	Ser	Lys	Leu	Gln	Glu	Arg
				245					250					255	
Asp	Tyr	Met	Ile	Thr	Arg	Arg	Gln	Leu	Cys	Tyr	His	Glu	Met	Phe	Asp
		260						265					270		
Lys	Asn	Met	Tyr	Asn	Val	Ser	Met	Ala	Val	Leu	Gly	Gln	Leu	Asn	Leu
		275					280					285			
Met	Asn	Asn	Leu	Asp	Thr	Leu	Phe	Gln	Glu	Gln	Asp	Lys	Glu	Leu	Tyr
	290					295					300				
Pro	Asn	Leu	Lys	Ile	Asn	Asn	Gly	Val	Leu	Tyr	Gly	Glu	Glu	Leu	Val
305					310					315					320
Thr	Leu	Asn	Ile	Ser	Ser	Lys	Phe	Lys	Tyr	Phe	Ile	Asn	Arg	Ile	Gln
				325					330					335	
Thr	Leu	Asn	Gly	Lys	His	Phe	Ile	Tyr	Phe	Ser	Asn	Ser	Thr	Tyr	Gly
		340						345					350		
Gly	Leu	Val	Ile	Lys	Tyr	Ile	Met	Leu	Ser	Asn	Gly	Tyr	Ser	Glu	Tyr
		355					360					365			
Asn	Gly	Ser	Gln	Gly	Thr	Asn	Pro	His	Met	Ile	Asn	Gly	Lys	Pro	Lys
	370					375				380					
Thr	Phe	Ala	Ile	Val	Thr	Ser	Lys	Met	Lys	Ser	Ser	Leu	Glu	Asp	Leu
385					390					395					400
Leu	Asp	Val	Tyr	Asn	Ser	Pro	Glu	Asn	Asp	Asp	Gly	Ser	Gln	Leu	Met
				405					410					415	
Phe	Leu	Phe	Ser	Ser	Asn	Ile	Met	Ser	Glu	Ser	Tyr	Thr	Leu	Lys	Glu
			420					425					430		
Val	Arg	His	Ile	Trp	Phe	Met	Thr	Ile	Pro	Asp	Thr	Phe	Ser	Gln	Tyr
		435					440					445			
Asn	Gln	Ile	Leu	Gly	Arg	Ser	Ile	Arg	Lys	Phe	Ser	Tyr	Ala	Asp	Ile
	450					455					460				
Ser	Glu	Pro	Val	Asn	Val	Tyr	Leu	Leu	Ala	Ala	Val	Tyr	Ser	Asp	Phe
465					470					475					480
Asn	Asp	Glu	Val	Thr	Ser	Leu	Asn	Asp	Tyr	Thr	Gln	Asp	Glu	Leu	Ile
				485					490					495	
Asn	Val	Leu	Pro	Phe	Asp	Ile	Lys	Lys	Leu	Leu	Tyr	Leu	Lys	Phe	Lys
			500					505					510		
Thr	Lys	Glu	Thr	Asn	Arg	Ile	Tyr	Ser	Ile	Leu	Gln	Glu	Met	Ser	Glu
		515					520					525			
Thr	Tyr	Ser	Leu	Pro	Pro	His	Pro	Ser	Ile	Val	Lys	Val	Leu	Leu	Gly
	530					535					540				
Glu	Leu	Val	Arg	Gln	Phe	Tyr	Asn	Asn	Ser	Arg	Ile	Lys	Tyr	Asn	
545					550				555						560
Asp	Ser	Lys	Leu	Leu	Lys	Met	Val	Thr	Ser	Val	Ile	Lys	Asn	Lys	Glu
				565					570					575	
Asp	Ala	Arg	Asn	Tyr	Ile	Asp	Asp	Ile	Val	Asn	Gly	His	Phe	Phe	Val
			580					585					590		
Ser	Asn	Lys	Val	Phe	Asp	Lys	Ser	Leu	Leu	Tyr	Lys	Tyr	Glu	Asn	Asp
		595				600						605			
Ile	Ile	Thr	Val	Pro	Phe	Arg	Leu	Ser	Tyr	Glu	Pro	Phe	Val	Trp	Gly
	610					615					620				
Val	Asn	Phe	Arg	Lys	Glu	Tyr	Asn	Val	Val	Ser	Ser	Pro			

625

630

635

<210> 241

<211> 486

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(486)

<400> 241

atg tcg agc ttt gtt acc aat gga tac ctt cca gtt aca ttg gaa cct	48
Met Ser Ser Phe Val Thr Asn Gly Tyr Leu Pro Val Thr Leu Glu Pro	
1 5 10 15	
cat gag ctg acg tta gac ata aaa act aat att agg aat gcc gta tat	96
His Glu Leu Thr Leu Asp Ile Lys Thr Asn Ile Arg Asn Ala Val Tyr	
20 25 30	
aag acg tat ctc cat aga gaa att agt ggt aaa atg gcc aag aaa ata	144
Lys Thr Tyr Leu His Arg Glu Ile Ser Gly Lys Met Ala Lys Lys Ile	
35 40 45	
gaa att cgt gaa gac gtg gaa tta cct ctc ggc gaa ata gtt aat aat	192
Glu Ile Arg Glu Asp Val Glu Leu Pro Leu Gly Glu Ile Val Asn Asn	
50 55 60	
tct gta gtt ata aac gtt ccg tgt gta ata acc tac gcg tat tat cac	240
Ser Val Val Ile Asn Val Pro Cys Val Ile Thr Tyr Ala Tyr Tyr His	
65 70 75 80	
gtt ggg gat ata gtc aga gga aca tta aac atc gaa gat gaa tca aat	288
Val Gly Asp Ile Val Arg Gly Thr Leu Asn Ile Glu Asp Glu Ser Asn	
85 90 95	
gta act att caa tgt gga gat tta atc tgt aaa cta agt aga gat tcg	336
Val Thr Ile Gln Cys Gly Asp Leu Ile Cys Lys Leu Ser Arg Asp Ser	
100 105 110	
ggt act gta tca ttt agc gat tca aag tac tgc ttt ttt cga aat ggt	384
Gly Thr Val Ser Phe Ser Asp Ser Lys Tyr Cys Phe Phe Arg Asn Gly	
115 120 125	
aat gcg tat gac aat ggc agc gaa gtc act gcc gtt cta atg gag gct	432
Asn Ala Tyr Asp Asn Gly Ser Glu Val Thr Ala Val Leu Met Glu Ala	
130 135 140	
caa caa ggt atc gaa tct agt ttt gtt ttt ctc gcg aat atc gtc gac	480
Gln Gln Gly Ile Glu Ser Ser Phe Val Phe Leu Ala Asn Ile Val Asp	
145 150 155 160	
tca taa	486
Ser *	

<210> 242

<211> 161
 <212> PRT
 <213> vaccinia virus

<400> 242
 Met Ser Ser Phe Val Thr Asn Gly Tyr Leu Pro Val Thr Leu Glu Pro
 1 5 10 15
 His Glu Leu Thr Leu Asp Ile Lys Thr Asn Ile Arg Asn Ala Val Tyr
 20 25 30
 Lys Thr Tyr Leu His Arg Glu Ile Ser Gly Lys Met Ala Lys Lys Ile
 35 40 45
 Glu Ile Arg Glu Asp Val Glu Leu Pro Leu Gly Glu Ile Val Asn Asn
 50 55 60
 Ser Val Val Ile Asn Val Pro Cys Val Ile Thr Tyr Ala Tyr Tyr His
 65 70 75 80
 Val Gly Asp Ile Val Arg Gly Thr Leu Asn Ile Glu Asp Glu Ser Asn
 85 90 95
 Val Thr Ile Gln Cys Gly Asp Leu Ile Cys Lys Leu Ser Arg Asp Ser
 100 105 110
 Gly Thr Val Ser Phe Ser Asp Ser Lys Tyr Cys Phe Phe Arg Asn Gly
 115 120 125
 Asn Ala Tyr Asp Asn Gly Ser Glu Val Thr Ala Val Leu Met Glu Ala
 130 135 140
 Gln Gln Gly Ile Glu Ser Ser Phe Val Phe Leu Ala Asn Ile Val Asp
 145 150 155 160
 Ser

<210> 243
 <211> 912
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(912)

<400> 243
 atg ccg caa caa cta tct cct att aat ata gaa act aaa aaa gca att 48
 Met Pro Gln Gln Leu Ser Pro Ile Asn Ile Glu Thr Lys Lys Ala Ile
 1 5 10 15
 tct aac gcg cga ttg aag ccg tta gac ata cat tat aat gag tcg aaa 96
 Ser Asn Ala Arg Leu Lys Pro Leu Asp Ile His Tyr Asn Glu Ser Lys
 20 25 30
 cca acc act atc cag aac act gga aaa cta gta agg att aat ttt aaa 144
 Pro Thr Thr Ile Gln Asn Thr Gly Lys Leu Val Arg Ile Asn Phe Lys
 35 40 45
 gga gga tat ata agt gga ggg ttt ctc ccc aat gaa tat gtg tta tca 192
 Gly Gly Tyr Ile Ser Gly Gly Phe Leu Pro Asn Glu Tyr Val Leu Ser
 50 55 60
 tca cta cat ata tat tgg gga aag gaa gac gat tat gga tcc aat cac 240
 Ser Leu His Ile Tyr Trp Gly Lys Glu Asp Asp Tyr Gly Ser Asn His
 65 70 75 80

ttg ata gat gtg tac aaa tac tct gga gag att aat ctt gtt cat tgg	288
Leu Ile Asp Val Tyr Lys Tyr Ser Gly Glu Ile Asn Leu Val His Trp	
85 90 95	
aat aag aaa aaa tat agt tct tat gaa gag gca aaa aaa cac gat gat	336
Asn Lys Lys Lys Tyr Ser Ser Tyr Glu Glu Ala Lys Lys His Asp Asp	
100 105 110	
gga ctt atc att att tct ata ttc tta caa gta ttg gat cat aaa aat	384
Gly Leu Ile Ile Ile Ser Ile Phe Leu Gln Val Leu Asp His Lys Asn	
115 120 125	
gta tat ttt caa aag ata gtt aat caa ttg gat tcc att aga tcc gcc	432
Val Tyr Phe Gln Lys Ile Val Asn Gln Leu Asp Ser Ile Arg Ser Ala	
130 135 140	
aat acg tct gca ccg ttt gat tca gta ttt tat cta gac aat ttg ctg	480
Asn Thr Ser Ala Pro Phe Asp Ser Val Phe Tyr Leu Asp Asn Leu Leu	
145 150 155 160	
cct agt aag ttg gat tat ttt aca tat cta gga aca act atc aac cac	528
Pro Ser Lys Leu Asp Tyr Phe Thr Tyr Leu Gly Thr Thr Ile Asn His	
165 170 175	
tct gca gac gct gta tgg ata att ttt cca acg cca ata aac att cat	576
Ser Ala Asp Ala Val Trp Ile Ile Phe Pro Thr Pro Ile Asn Ile His	
180 185 190	
tct gat caa cta tct aaa ttc aga aca cta ttg tcg ttg tct aat cat	624
Ser Asp Gln Leu Ser Lys Phe Arg Thr Leu Leu Ser Leu Ser Asn His	
195 200 205	
gag ggc aaa ccg cat tat ata aca gag aac tat aga aat ccg tat aaa	672
Gly Gly Lys Pro His Tyr Ile Thr Glu Asn Tyr Arg Asn Pro Tyr Lys	
210 215 220	
ttg aac gat gac aca gaa gta tat tat tct ggg gag att ata cga gca	720
Leu Asn Asp Asp Thr Glu Val Tyr Tyr Ser Gly Glu Ile Ile Arg Ala	
225 230 235 240	
gca act acc tct cca gcg cgc gag aac tat ttt atg aga tgg ttg tcc	768
Ala Thr Thr Ser Pro Ala Arg Glu Asn Tyr Phe Met Arg Trp Leu Ser	
245 250 255	
gat ttg aga gag aca tgt ttt tca tat tat caa aaa tat atc gaa ggg	816
Asp Leu Arg Glu Thr Cys Phe Ser Tyr Tyr Gln Lys Tyr Ile Glu Gly	
260 265 270	
aat aaa aca ttc gca att att gcc ata gta ttc gtg ttt ata ctt acc	864
Asn Lys Thr Phe Ala Ile Ile Ala Ile Val Phe Val Phe Ile Leu Thr	
275 280 285	
gct att ctc ttt ttt atg agt cga cga tat tcg cga gaa aaa caa aac	912
Ala Ile Leu Phe Phe Met Ser Arg Arg Tyr Ser Arg Glu Lys Gln Asn	
290 295 300	

<210> 244

<211> 304
 <212> PRT
 <213> vaccinia virus

<400> 244

Met	Pro	Gln	Gln	Leu	Ser	Pro	Ile	Asn	Ile	Glu	Thr	Lys	Lys	Ala	Ile
1				5					10					15	
Ser	Asn	Ala	Arg	Leu	Lys	Pro	Leu	Asp	Ile	His	Tyr	Asn	Glu	Ser	Lys
		20						25					30		
Pro	Thr	Thr	Ile	Gln	Asn	Thr	Gly	Lys	Leu	Val	Arg	Ile	Asn	Phe	Lys
		35					40					45			
Gly	Gly	Tyr	Ile	Ser	Gly	Gly	Phe	Leu	Pro	Asn	Glu	Tyr	Val	Leu	Ser
	50				55						60				
Ser	Leu	His	Ile	Tyr	Trp	Gly	Lys	Glu	Asp	Asp	Tyr	Gly	Ser	Asn	His
65				70					75					80	
Leu	Ile	Asp	Val	Tyr	Lys	Tyr	Ser	Gly	Glu	Ile	Asn	Leu	Val	His	Trp
			85						90					95	
Asn	Lys	Lys	Lys	Tyr	Ser	Ser	Tyr	Glu	Glu	Ala	Lys	Lys	His	Asp	Asp
			100					105					110		
Gly	Leu	Ile	Ile	Ile	Ser	Ile	Phe	Leu	Gln	Val	Leu	Asp	His	Lys	Asn
		115					120					125			
Val	Tyr	Phe	Gln	Lys	Ile	Val	Asn	Gln	Leu	Asp	Ser	Ile	Arg	Ser	Ala
	130					135					140				
Asn	Thr	Ser	Ala	Pro	Phe	Asp	Ser	Val	Phe	Tyr	Leu	Asp	Asn	Leu	Leu
145				150					155					160	
Pro	Ser	Lys	Leu	Asp	Tyr	Phe	Thr	Tyr	Leu	Gly	Thr	Thr	Ile	Asn	His
			165					170						175	
Ser	Ala	Asp	Ala	Val	Trp	Ile	Ile	Phe	Pro	Thr	Pro	Ile	Asn	Ile	His
			180					185					190		
Ser	Asp	Gln	Leu	Ser	Lys	Phe	Arg	Thr	Leu	Leu	Ser	Leu	Ser	Asn	His
		195					200					205			
Glu	Gly	Lys	Pro	His	Tyr	Ile	Thr	Glu	Asn	Tyr	Arg	Asn	Pro	Tyr	Lys
	210				215						220				
Leu	Asn	Asp	Asp	Thr	Glu	Val	Tyr	Tyr	Ser	Gly	Glu	Ile	Ile	Arg	Ala
225				230						235				240	
Ala	Thr	Thr	Ser	Pro	Ala	Arg	Glu	Asn	Tyr	Phe	Met	Arg	Trp	Leu	Ser
			245					250						255	
Asp	Leu	Arg	Glu	Thr	Cys	Phe	Ser	Tyr	Tyr	Gln	Lys	Tyr	Ile	Glu	Gly
		260					265						270		
Asn	Lys	Thr	Phe	Ala	Ile	Ile	Ala	Ile	Val	Phe	Val	Phe	Ile	Leu	Thr
	275					280						285			
Ala	Ile	Leu	Phe	Phe	Met	Ser	Arg	Arg	Tyr	Ser	Arg	Glu	Lys	Gln	Asn
290						295					300				

<210> 245
 <211> 642
 <212> DNA
 <213> vaccinia virus

<220>

<221> CDS

<222> (1)...(642)

<400> 245

atg	gga	att	aca	atg	gat	gag	gaa	gtg	ata	ttt	gaa	act	cct	aga	gaa
Met	Gly	Ile	Thr	Met	Asp	Glu	Glu	Val	Ile	Phe	Glu	Thr	Pro	Arg	Glu
1				5				10						15	48

tta ata tct att aaa cga ata aaa gat att cca aga tca aaa gac acg	96
Leu Ile Ser Ile Lys Arg Ile Lys Asp Ile Pro Arg Ser Lys Asp Thr	
20 25 30	
cat gtg ttt gct gcg tgt ata aca agt gac gga tat ccg tta ata gga	144
His Val Phe Ala Ala Cys Ile Thr Ser Asp Gly Tyr Pro Leu Ile Gly	
35 40 45	
gct aga aga act tca ttc gcg ttc cag gcg ata tta tct caa caa aat	192
Ala Arg Arg Thr Ser Phe Ala Phe Gln Ala Ile Leu Ser Gln Gln Asn	
50 55 60	
tca gat tct atc ttt aga gta tcc act aaa cta tta cgg ttt atg tac	240
Ser Asp Ser Ile Phe Arg Val Ser Thr Lys Leu Leu Arg Phe Met Tyr	
65 70 75 80	
tac aat gaa cta aga gaa atc ttt aga cgg ttg aga aaa ggt tct atc	288
Tyr Asn Glu Leu Arg Glu Ile Phe Arg Arg Leu Arg Lys Gly Ser Ile	
85 90 95	
aac aat atc gat cct cac ttt gaa gag tta ata tta ttg ggt ggt aaa	336
Asn Asn Ile Asp Pro His Phe Glu Glu Leu Ile Leu Leu Gly Gly Lys	
100 105 110	
cta gat aaa aag gaa tct att aaa gat tgt tta aga aga gaa tta aaa	384
Leu Asp Lys Lys Glu Ser Ile Lys Asp Cys Leu Arg Arg Glu Leu Lys	
115 120 125	
gag gaa agt gat gaa cgt ata aca gta aaa gaa ttt gga aat gta att	432
Glu Glu Ser Asp Glu Arg Ile Thr Val Lys Glu Phe Gly Asn Val Ile	
130 135 140	
cta aaa ctt aca aca cgg gat aaa tta ttt aat aaa gta tat ata agt	480
Leu Lys Leu Thr Thr Arg Asp Lys Leu Phe Asn Lys Val Tyr Ile Ser	
145 150 155 160	
tat tgc atg gcg tgt ttt att aat caa tcg ttg gag gat tta tcg cat	528
Tyr Cys Met Ala Cys Phe Ile Asn Gln Ser Leu Glu Asp Leu Ser His	
165 170 175	
act agt att tac aat gta gaa att aga aag att aaa tca tta aat gat	576
Thr Ser Ile Tyr Asn Val Glu Ile Arg Lys Ile Lys Ser Leu Asn Asp	
180 185 190	
tgt att aac gac gat aaa tac gaa tat ctg tct tat att tat aat atg	624
Cys Ile Asn Asp Asp Lys Tyr Glu Tyr Leu Ser Tyr Ile Tyr Asn Met	
195 200 205	
cta gtt aat agt aaa tga	642
Leu Val Asn Ser Lys *	
210	

<210> 246
 <211> 213
 <212> PRT
 <213> vaccinia virus

<400> 246

Met	Gly	Ile	Thr	Met	Asp	Glu	Glu	Val	Ile	Phe	Glu	Thr	Pro	Arg	Glu
1				5					10					15	
Leu	Ile	Ser	Ile	Lys	Arg	Ile	Lys	Asp	Ile	Pro	Arg	Ser	Lys	Asp	Thr
			20					25					30		
His	Val	Phe	Ala	Ala	Cys	Ile	Thr	Ser	Asp	Gly	Tyr	Pro	Leu	Ile	Gly
		35				40						45			
Ala	Arg	Arg	Thr	Ser	Phe	Ala	Phe	Gln	Ala	Ile	Leu	Ser	Gln	Gln	Asn
	50					55					60				
Ser	Asp	Ser	Ile	Phe	Arg	Val	Ser	Thr	Lys	Leu	Leu	Arg	Phe	Met	Tyr
65				70					75						80
Tyr	Asn	Glu	Leu	Arg	Glu	Ile	Phe	Arg	Arg	Leu	Arg	Lys	Gly	Ser	Ile
				85				90						95	
Asn	Asn	Ile	Asp	Pro	His	Phe	Glu	Glu	Leu	Ile	Leu	Leu	Gly	Gly	Lys
			100					105					110		
Leu	Asp	Lys	Lys	Glu	Ser	Ile	Lys	Asp	Cys	Leu	Arg	Arg	Glu	Leu	Lys
		115					120					125			
Glu	Glu	Ser	Asp	Glu	Arg	Ile	Thr	Val	Lys	Glu	Phe	Gly	Asn	Val	Ile
	130					135					140				
Leu	Lys	Leu	Thr	Thr	Arg	Asp	Lys	Leu	Phe	Asn	Lys	Val	Tyr	Ile	Ser
145					150					155					160
Tyr	Cys	Met	Ala	Cys	Phe	Ile	Asn	Gln	Ser	Leu	Glu	Asp	Leu	Ser	His
			165					170						175	
Thr	Ser	Ile	Tyr	Asn	Val	Glu	Ile	Arg	Lys	Ile	Lys	Ser	Leu	Asn	Asp
			180					185					190		
Cys	Ile	Asn	Asp	Asp	Lys	Tyr	Glu	Tyr	Leu	Ser	Tyr	Ile	Tyr	Asn	Met
		195					200					205			
Leu	Val	Asn	Ser	Lys											
	210														

<210> 247
 <211> 747
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(747)

<400> 247																
atg	aac	ttt	tac	aga	tct	agt	ata	att	agt	cag	att	att	aag	tat	aat	48
Met	Asn	Phe	Tyr	Arg	Ser	Ser	Ile	Ile	Ser	Gln	Ile	Ile	Lys	Tyr	Asn	
1				5					10					15		
aga	cga	cta	gct	aag	tct	att	att	tgc	aag	gat	gac	tct	caa	att	att	96
Arg	Arg	Leu	Ala	Lys	Ser	Ile	Ile	Cys	Lys	Asp	Asp	Ser	Gln	Ile	Ile	
			20					25					30			
aca	ctc	acg	gca	ttc	gtt	aac	caa	tgc	cta	tgg	tgt	cat	aaa	cga	gta	144
Thr	Leu	Thr	Ala	Phe	Val	Asn	Gln	Cys	Leu	Trp	Cys	His	Lys	Arg	Val	
			35				40					45				
tcc	gtg	tcc	gct	att	tta	tta	act	act	gat	aac	aaa	ata	tta	gta	tgt	192
Ser	Val	Ser	Ala	Ile	Leu	Leu	Thr	Thr	Asp	Asn	Lys	Ile	Leu	Val	Cys	
		50				55					60					
aac	aga	cga	gat	agt	ttt	ctc	tat	tct	gaa	ata	att	aga	act	aga	aac	240
Asn	Arg	Arg	Asp	Ser	Phe	Leu	Tyr	Ser	Glu	Ile	Ile	Arg	Thr	Arg	Asn	
65					70					75					80	

atg ttt aga aag aaa cga tta ttt ctg aat tat tcc aat tat ttg tcc	288
Met Phe Arg Lys Lys Arg Leu Phe Leu Asn Tyr Ser Asn Tyr Leu Ser	
85 90 95	
aaa cag gaa aga agt ata cta tcg tca ttt ttt tct cta tat cca gct	336
Lys Gln Glu Arg Ser Ile Leu Ser Ser Phe Phe Ser Leu Tyr Pro Ala	
100 105 110	
act gct gat aat gat aga ata gac gct att tat ccg ggt ggc ata ccc	384
Thr Ala Asp Asn Asp Arg Ile Asp Ala Ile Tyr Pro Gly Gly Ile Pro	
115 120 125	
aaa agg ggt gag aat gtt cca gag tgt tta tcc agg gaa att aaa gaa	432
Lys Arg Gly Glu Asn Val Pro Glu Cys Leu Ser Arg Glu Ile Lys Glu	
130 135 140	
gaa gtt aat ata gac aat tct ttt gta ttc ata gac act cgg ttt ttt	480
Glu Val Asn Ile Asp Asn Ser Phe Val Phe Ile Asp Thr Arg Phe Phe	
145 150 155 160	
att cat ggc atc ata gaa gat acc att att aat aaa ttt ttt gag gta	528
Ile His Gly Ile Ile Glu Asp Thr Ile Ile Asn Lys Phe Phe Glu Val	
165 170 175	
atc ttc ttt gtc gga aga ata tct cta acg agt gat caa atc att gat	576
Ile Phe Phe Val Gly Arg Ile Ser Leu Thr Ser Asp Gln Ile Ile Asp	
180 185 190	
aca ttt aaa agt aat cat gaa atc aag gat cta ata ttt tta gat ccg	624
Thr Phe Lys Ser Asn His Glu Ile Lys Asp Leu Ile Phe Leu Asp Pro	
195 200 205	
aat tca ggt aat gga cta caa tac gaa att gca aaa tat gct cta gat	672
Asn Ser Gly Asn Gly Leu Gln Tyr Glu Ile Ala Lys Tyr Ala Leu Asp	
210 215 220	
act gca aaa ctt aaa tgt tac ggc cat aga gga tgt tat tac gaa tca	720
Thr Ala Lys Leu Lys Cys Tyr Gly His Arg Gly Cys Tyr Tyr Glu Ser	
225 230 235 240	
tta aaa aaa tta act gag gat gat tga	747
Leu Lys Lys Leu Thr Glu Asp Asp *	
245	

<210> 248

<211> 248

<212> PRT

<213> vaccinia virus

<400> 248

Met Asn Phe Tyr Arg Ser Ser Ile Ile Ser Gln Ile Ile Lys Tyr Asn	
1 5 10 15	
Arg Arg Leu Ala Lys Ser Ile Ile Cys Lys Asp Asp Ser Gln Ile Ile	
20 25 30	
Thr Leu Thr Ala Phe Val Asn Gln Cys Leu Trp Cys His Lys Arg Val	
35 40 45	
Ser Val Ser Ala Ile Leu Leu Thr Thr Asp Asn Lys Ile Leu Val Cys	

50	Asn Arg Arg Asp Ser Phe	55	Leu Tyr Ser Glu Ile	60	Ile Arg Thr Arg Asn
65	Met Phe Arg Lys Lys Arg	70	Leu Phe Leu Asn Tyr	75	Ser Asn Tyr Leu Ser
		85	Leu Ser Ser Phe Phe	90	Ser Leu Tyr Pro Ala
		100	Ile Ser Phe Phe	105	Ser Leu Tyr Pro Ala
		115	Thr Ala Asp Asn Asp Arg	120	Ile Tyr Pro Gly Gly Ile Pro
		130	Lys Arg Gly Glu Asn Val	135	Pro Glu Cys Leu Ser Arg
		145	Glu Val Asn Ile Asp Asn	150	Ser Phe Val Phe Ile Asp
		155	Thr Arg Phe Phe	160	Glu Val
		165	Ile His Gly Ile Ile Glu	170	Asp Thr Ile Ile Asn Lys
		180	Phe Phe Val Gly Arg Ile	185	Ser Leu Thr Ser Asp Gln
		195	Thr Phe Lys Ser Asn His	200	Glu Ile Lys Asp Leu Ile
		205	Asn Ser Gly Asn Gly Leu	210	Gln Tyr Glu Ile Ala Lys
		215	Thr Ala Lys Leu Lys Cys	220	Tyr Tyr Ala Leu Asp
		225	Leu Lys Lys Leu Thr Glu	230	Asp Asp
		235		240	
		245			

<210> 249
 <211> 1893
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1893)

<400> 249	
atg agt aaa tca cac gcg gcc tat atc gat tat gca ttg cgc aga act	48
Met Ser Lys Ser His Ala Ala Tyr Ile Asp Tyr Ala Leu Arg Arg Thr	
1 5 10 15	
act aat atg cct gtt gaa atg atg gga aca gac gta gta cgc ctc aag	96
Thr Asn Met Pro Val Glu Met Met Gly Thr Asp Val Val Arg Leu Lys	
20 25 30	
gat tat caa cat ttt gta gca aga gtt ttc tta gga tta gac agt atg	144
Asp Tyr Gln His Phe Val Ala Arg Val Phe Leu Gly Leu Asp Ser Met	
35 40 45	
cat tct ctt tta ttg ttc cat gaa acg ggt gtc ggt aaa aca atg act	192
His Ser Leu Leu Leu Phe His Glu Thr Gly Val Gly Lys Thr Met Thr	
50 55 60	
act gta tat att ctc aaa cat ctt aag gat att tat acg aat tgg gct	240
Thr Val Tyr Ile Leu Lys His Leu Lys Asp Ile Tyr Thr Asn Trp Ala	
65 70 75 80	
att atc tta ttg gtg aaa aag gct ttg ata gaa gat cct tgg atg aac	288
Ile Ile Leu Leu Val Lys Lys Ala Leu Ile Glu Asp Pro Trp Met Asn	

85										90					95					
act	ata	ctc	aga	tac	gct	cca	gag	ata	acg	aag	gat	tgt	att	ttt	att	336				
Thr	Ile	Leu	Arg	Tyr	Ala	Pro	Glu	Ile	Thr	Lys	Asp	Cys	Ile	Phe	Ile					
			100					105					110							
aat	tac	gat	gat	caa	aat	ttt	aga	aat	aaa	ttt	ttt	act	aat	atc	aaa	384				
Asn	Tyr	Asp	Asp	Gln	Asn	Phe	Arg	Asn	Lys	Phe	Phe	Thr	Asn	Ile	Lys					
		115					120					125								
act	att	aat	tcc	aag	agt	aga	ata	tgc	gtc	att	att	gat	gaa	tgt	cat	432				
Thr	Ile	Asn	Ser	Lys	Ser	Arg	Ile	Cys	Val	Ile	Ile	Asp	Glu	Cys	His					
	130					135					140									
aac	ttc	att	tct	aaa	tca	tta	atc	aaa	gaa	gat	ggg	aag	atc	cgt	cct	480				
Asn	Phe	Ile	Ser	Lys	Ser	Leu	Ile	Lys	Glu	Asp	Gly	Lys	Ile	Arg	Pro					
145					150				155					160						
act	cgt	tca	gta	tat	aat	ttt	tta	tcc	aag	acc	atc	gca	tta	aaa	aac	528				
Thr	Arg	Ser	Val	Tyr	Asn	Phe	Leu	Ser	Lys	Thr	Ile	Ala	Leu	Lys	Asn					
				165					170					175						
cat	aag	atg	att	tgt	tta	tcg	gct	aca	cct	atc	gtc	aat	agt	gtg	caa	576				
His	Lys	Met	Ile	Cys	Leu	Ser	Ala	Thr	Pro	Ile	Val	Asn	Ser	Val	Gln					
			180					185					190							
gaa	ttc	acc	atg	ttg	gtt	aac	tta	cta	cga	cca	gga	tcc	tta	caa	cac	624				
Glu	Phe	Thr	Met	Leu	Val	Asn	Leu	Leu	Arg	Pro	Gly	Ser	Leu	Gln	His					
		195					200					205								
caa	tca	cta	ttt	gag	aat	aaa	cgt	cta	gtc	gat	gaa	aaa	gaa	tta	gtc	672				
Gln	Ser	Leu	Phe	Glu	Asn	Lys	Arg	Leu	Val	Asp	Glu	Lys	Glu	Leu	Val					
	210					215				220										
tcc	aaa	cta	gga	gga	cta	tgt	tcg	tat	ata	gtt	aat	aac	gag	ttt	tct	720				
Ser	Lys	Leu	Gly	Gly	Leu	Cys	Ser	Tyr	Ile	Val	Asn	Asn	Glu	Phe	Ser					
225					230					235					240					
att	ttt	gat	gac	gta	gaa	ggg	tct	gca	tca	ttc	gct	aag	aaa	aca	gta	768				
Ile	Phe	Asp	Asp	Val	Glu	Gly	Ser	Ala	Ser	Phe	Ala	Lys	Lys	Thr	Val					
				245					250					255						
tta	atg	cga	tac	gtt	aat	atg	tcg	aaa	aag	caa	gaa	gaa	att	tat	caa	816				
Leu	Met	Arg	Tyr	Val	Asn	Met	Ser	Lys	Lys	Gln	Glu	Glu	Ile	Tyr	Gln					
			260					265					270							
aag	gct	aaa	ctc	gct	gaa	ata	aaa	aca	ggg	ata	tca	tca	ttt	aga	att	864				
Lys	Ala	Lys	Leu	Ala	Glu	Ile	Lys	Thr	Gly	Ile	Ser	Ser	Phe	Arg	Ile					
		275					280					285								
ctg	aga	cgt	atg	gct	act	acg	ttt	acg	ttc	gat	agc	ttt	cct	gaa	aga	912				
Leu	Arg	Arg	Met	Ala	Thr	Thr	Phe	Thr	Phe	Asp	Ser	Phe	Pro	Glu	Arg					
	290					295					300									
caa	aat	cgt	gat	ccg	ggc	gaa	tac	gcg	caa	gag	ata	gca	aca	cta	tat	960				
Gln	Asn	Arg	Asp	Pro	Gly	Glu	Tyr	Ala	Gln	Glu	Ile	Ala	Thr	Leu	Tyr					
305					310					315					320					
aat	gat	ttt	aaa	aat	tca	tta	aga	gat	aga	gag	ttt	tct	aaa	tcc	gca	1008				

Asn	Asp	Phe	Lys	Asn	Ser	Leu	Arg	Asp	Arg	Glu	Phe	Ser	Lys	Ser	Ala		
				325					330					335			
tta	gat	acc	ttt	aaa	aag	gga	gaa	cta	ttg	aaa	ggg	gat	gct	agt	gcg	1056	
Leu	Asp	Thr	Phe	Lys	Lys	Gly	Glu	Leu	Leu	Lys	Gly	Asp	Ala	Ser	Ala		
			340					345					350				
gct	gat	atc	tct	cta	ttt	act	gaa	tta	aaa	gag	aaa	agc	gtc	aaa	ttt	1104	
Ala	Asp	Ile	Ser	Leu	Phe	Thr	Glu	Leu	Lys	Glu	Lys	Ser	Val	Lys	Phe		
			355				360					365					
ata	gat	gta	tgt	ttg	gga	ata	tta	gca	tcc	cat	ggg	aaa	tgt	cta	gtc	1152	
Ile	Asp	Val	Cys	Leu	Gly	Ile	Leu	Ala	Ser	His	Gly	Lys	Cys	Leu	Val		
			370			375					380						
ttt	gaa	cca	ttt	gtt	aat	cag	tca	gga	ata	gaa	atc	tta	tta	cta	tat	1200	
Phe	Glu	Pro	Phe	Val	Asn	Gln	Ser	Gly	Ile	Glu	Ile	Leu	Leu	Leu	Tyr		
					390					395					400		
ttc	aaa	gtc	ttt	ggg	atc	tct	aat	ata	gag	ttc	tca	tct	aga	aca	aaa	1248	
Phe	Lys	Val	Phe	Gly	Ile	Ser	Asn	Ile	Glu	Phe	Ser	Ser	Arg	Thr	Lys		
				405					410					415			
gat	act	aga	atc	aag	gcg	gtg	gct	gag	ttt	aac	caa	gaa	tca	aac	act	1296	
Asp	Thr	Arg	Ile	Lys	Ala	Val	Ala	Glu	Phe	Asn	Gln	Glu	Ser	Asn	Thr		
				420				425					430				
aac	gga	gaa	tgc	att	aaa	aca	tgc	gta	ttc	tct	tct	agt	gga	ggc	gag	1344	
Asn	Gly	Glu	Cys	Ile	Lys	Thr	Cys	Val	Phe	Ser	Ser	Ser	Gly	Gly	Glu		
				435			440					445					
ggg	att	agt	ttt	ttc	tca	att	aat	gat	atc	ttc	att	tta	gat	atg	aca	1392	
Gly	Ile	Ser	Phe	Phe	Ser	Ile	Asn	Asp	Ile	Phe	Ile	Leu	Asp	Met	Thr		
						455					460						
tgg	aac	gag	gcg	tct	ctt	cgt	cag	ata	gta	gga	aga	gcc	att	cgt	ctc	1440	
Trp	Asn	Glu	Ala	Ser	Leu	Arg	Gln	Ile	Val	Gly	Arg	Ala	Ile	Arg	Leu		
					470					475					480		
aat	agt	cac	gtt	ctt	act	cct	cca	gaa	cgt	aga	tat	gta	aac	gtg	cac	1488	
Asn	Ser	His	Val	Leu	Thr	Pro	Pro	Glu	Arg	Arg	Tyr	Val	Asn	Val	His		
					485				490					495			
ttt	ata	atg	gct	aga	tta	tct	aat	ggg	atg	cct	act	gta	gac	gaa	gac	1536	
Phe	Ile	Met	Ala	Arg	Leu	Ser	Asn	Gly	Met	Pro	Thr	Val	Asp	Glu	Asp		
					500			505					510				
cta	ttt	gaa	atc	att	caa	agc	aaa	tca	aaa	gaa	ttt	gtc	caa	ttg	ttt	1584	
Leu	Phe	Glu	Ile	Ile	Gln	Ser	Lys	Ser	Lys	Glu	Phe	Val	Gln	Leu	Phe		
							520					525					
aga	gtg	ttt	aaa	cat	aca	tca	tta	gaa	tgg	att	cat	gct	aat	gaa	aaa	1632	
Arg	Val	Phe	Lys	His	Thr	Ser	Leu	Glu	Trp	Ile	His	Ala	Asn	Glu	Lys		
						535					540						
gac	ttc	tca	ccg	atc	gac	aat	gag	tcc	ggg	tgg	aaa	acc	ttg	gtt	tca	1680	
Asp	Phe	Ser	Pro	Ile	Asp	Asn	Glu	Ser	Gly	Trp	Lys	Thr	Leu	Val	Ser		
					550				555						560		

aga gcc atc gat cta tcg tct aaa aaa aat att acc aat aaa cta att	1728
Arg Ala Ile Asp Leu Ser Ser Lys Lys Asn Ile Thr Asn Lys Leu Ile	
565 570 575	
gag ggt act aat att tgg tat tcc aat tct aat aga tta atg tca ata	1776
Glu Gly Thr Asn Ile Trp Tyr Ser Asn Ser Asn Arg Leu Met Ser Ile	
580 585 590	
aat aga gga ttt aaa ggc gta gat ggt cga gta tac gat gta gac ggt	1824
Asn Arg Gly Phe Lys Gly Val Asp Gly Arg Val Tyr Asp Val Asp Gly	
595 600 605	
aac tat cta cat gat atg ccg gac aat ccc gtt ata aaa ata cac gat	1872
Asn Tyr Leu His Asp Met Pro Asp Asn Pro Val Ile Lys Ile His Asp	
610 615 620	
ggt aaa tta att tat att ttc	1893
Gly Lys Leu Ile Tyr Ile Phe	
625 630	

<210> 250
 <211> 631
 <212> PRT
 <213> vaccinia virus

<400> 250

Met Ser Lys Ser His Ala Ala Tyr Ile Asp Tyr Ala Leu Arg Arg Thr	
1 5 10 15	
Thr Asn Met Pro Val Glu Met Met Gly Thr Asp Val Val Arg Leu Lys	
20 25 30	
Asp Tyr Gln His Phe Val Ala Arg Val Phe Leu Gly Leu Asp Ser Met	
35 40 45	
His Ser Leu Leu Leu Phe His Glu Thr Gly Val Gly Lys Thr Met Thr	
50 55 60	
Thr Val Tyr Ile Leu Lys His Leu Lys Asp Ile Tyr Thr Asn Trp Ala	
65 70 75 80	
Ile Ile Leu Leu Val Lys Lys Ala Leu Ile Glu Asp Pro Trp Met Asn	
85 90 95	
Thr Ile Leu Arg Tyr Ala Pro Glu Ile Thr Lys Asp Cys Ile Phe Ile	
100 105 110	
Asn Tyr Asp Asp Gln Asn Phe Arg Asn Lys Phe Phe Thr Asn Ile Lys	
115 120 125	
Thr Ile Asn Ser Lys Ser Arg Ile Cys Val Ile Ile Asp Glu Cys His	
130 135 140	
Asn Phe Ile Ser Lys Ser Leu Ile Lys Glu Asp Gly Lys Ile Arg Pro	
145 150 155 160	
Thr Arg Ser Val Tyr Asn Phe Leu Ser Lys Thr Ile Ala Leu Lys Asn	
165 170 175	
His Lys Met Ile Cys Leu Ser Ala Thr Pro Ile Val Asn Ser Val Gln	
180 185 190	
Glu Phe Thr Met Leu Val Asn Leu Leu Arg Pro Gly Ser Leu Gln His	
195 200 205	
Gln Ser Leu Phe Glu Asn Lys Arg Leu Val Asp Glu Lys Glu Leu Val	
210 215 220	
Ser Lys Leu Gly Gly Leu Cys Ser Tyr Ile Val Asn Asn Glu Phe Ser	
225 230 235 240	
Ile Phe Asp Asp Val Glu Gly Ser Ala Ser Phe Ala Lys Lys Thr Val	
245 250 255	

Leu Met Arg Tyr Val Asn Met Ser Lys Lys Gln Glu Glu Ile Tyr Gln
 260 265 270
 Lys Ala Lys Leu Ala Glu Ile Lys Thr Gly Ile Ser Ser Phe Arg Ile
 275 280 285
 Leu Arg Arg Met Ala Thr Thr Phe Thr Phe Asp Ser Phe Pro Glu Arg
 290 295 300
 Gln Asn Arg Asp Pro Gly Glu Tyr Ala Gln Glu Ile Ala Thr Leu Tyr
 305 310 315 320
 Asn Asp Phe Lys Asn Ser Leu Arg Asp Arg Glu Phe Ser Lys Ser Ala
 325 330 335
 Leu Asp Thr Phe Lys Lys Gly Glu Leu Leu Lys Gly Asp Ala Ser Ala
 340 345 350
 Ala Asp Ile Ser Leu Phe Thr Glu Leu Lys Glu Lys Ser Val Lys Phe
 355 360 365
 Ile Asp Val Cys Leu Gly Ile Leu Ala Ser His Gly Lys Cys Leu Val
 370 375 380
 Phe Glu Pro Phe Val Asn Gln Ser Gly Ile Glu Ile Leu Leu Leu Tyr
 385 390 395 400
 Phe Lys Val Phe Gly Ile Ser Asn Ile Glu Phe Ser Ser Arg Thr Lys
 405 410 415
 Asp Thr Arg Ile Lys Ala Val Ala Glu Phe Asn Gln Glu Ser Asn Thr
 420 425 430
 Asn Gly Glu Cys Ile Lys Thr Cys Val Phe Ser Ser Ser Gly Gly Glu
 435 440 445
 Gly Ile Ser Phe Phe Ser Ile Asn Asp Ile Phe Ile Leu Asp Met Thr
 450 455 460
 Trp Asn Glu Ala Ser Leu Arg Gln Ile Val Gly Arg Ala Ile Arg Leu
 465 470 475 480
 Asn Ser His Val Leu Thr Pro Pro Glu Arg Arg Tyr Val Asn Val His
 485 490 495
 Phe Ile Met Ala Arg Leu Ser Asn Gly Met Pro Thr Val Asp Glu Asp
 500 505 510
 Leu Phe Glu Ile Ile Gln Ser Lys Ser Lys Glu Phe Val Gln Leu Phe
 515 520 525
 Arg Val Phe Lys His Thr Ser Leu Glu Trp Ile His Ala Asn Glu Lys
 530 535 540
 Asp Phe Ser Pro Ile Asp Asn Glu Ser Gly Trp Lys Thr Leu Val Ser
 545 550 555 560
 Arg Ala Ile Asp Leu Ser Ser Lys Lys Asn Ile Thr Asn Lys Leu Ile
 565 570 575
 Glu Gly Thr Asn Ile Trp Tyr Ser Asn Ser Asn Arg Leu Met Ser Ile
 580 585 590
 Asn Arg Gly Phe Lys Gly Val Asp Gly Arg Val Tyr Asp Val Asp Gly
 595 600 605
 Asn Tyr Leu His Asp Met Pro Asp Asn Pro Val Ile Lys Ile His Asp
 610 615 620
 Gly Lys Leu Ile Tyr Ile Phe
 625 630

<210> 251
 <211> 864
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(864)

<400> 251

atg gat gaa att gta aaa aat atc cgg gag gga acg cat gtc ctt ctt	48
Met Asp Glu Ile Val Lys Asn Ile Arg Glu Gly Thr His Val Leu Leu	
1 5 10 15	
cca ttt tat gaa aca ttg cca gaa ctt aat ctg tct cta ggt aaa agc	96
Pro Phe Tyr Glu Thr Leu Pro Glu Leu Asn Leu Ser Leu Gly Lys Ser	
20 25 30	
cca tta cct agt ctg gaa tac gga gct aat tac ttt ctt cag att tct	144
Pro Leu Pro Ser Leu Glu Tyr Gly Ala Asn Tyr Phe Leu Gln Ile Ser	
35 40 45	
aga gtt aat gat cta aat aga atg ccg acc gac atg tta aaa ctt ttt	192
Arg Val Asn Asp Leu Asn Arg Met Pro Thr Asp Met Leu Lys Leu Phe	
50 55 60	
aca cat gat atc atg tta cca gaa agc gat cta gat aaa gtc tat gaa	240
Thr His Asp Ile Met Leu Pro Glu Ser Asp Leu Asp Lys Val Tyr Glu	
65 70 75 80	
att tta aag att aat agc gta aag tat tat ggg agg agt act aaa gcg	288
Ile Leu Lys Ile Asn Ser Val Lys Tyr Tyr Gly Arg Ser Thr Lys Ala	
85 90 95	
gac gcc gta gtt gcc gac ctg agc gca cgc aat aaa ctg ttc aaa cgt	336
Asp Ala Val Val Ala Asp Leu Ser Ala Arg Asn Lys Leu Phe Lys Arg	
100 105 110	
gaa cga gat gct att aaa tct aat aat cat ctg act gaa aac aat cta	384
Glu Arg Asp Ala Ile Lys Ser Asn Asn His Leu Thr Glu Asn Asn Leu	
115 120 125	
tac att agc gat tat aag atg tta acc ttc gac gtg ttt cga cca tta	432
Tyr Ile Ser Asp Tyr Lys Met Leu Thr Phe Asp Val Phe Arg Pro Leu	
130 135 140	
ttt gat ttt gta aac gaa aaa tat tgt att att aaa ctt cca act tta	480
Phe Asp Phe Val Asn Glu Lys Tyr Cys Ile Ile Lys Leu Pro Thr Leu	
145 150 155 160	
ttc ggt aga ggt gta atc gat act atg aga ata tat tgt agt ctg ttt	528
Phe Gly Arg Gly Val Ile Asp Thr Met Arg Ile Tyr Cys Ser Leu Phe	
165 170 175	
aaa aat gtt aga ctg cta aaa tgc gta agc gat agc tgg ttg aaa gat	576
Lys Asn Val Arg Leu Leu Lys Cys Val Ser Asp Ser Trp Leu Lys Asp	
180 185 190	
agc gcc att atg gtg gct agt gat gtt tgt aaa aaa aat ttg gat tta	624
Ser Ala Ile Met Val Ala Ser Asp Val Cys Lys Lys Asn Leu Asp Leu	
195 200 205	
ttt atg tct cat gtt aag tcc gtc act aag tct tct tct tgg aag gat	672
Phe Met Ser His Val Lys Ser Val Thr Lys Ser Ser Ser Trp Lys Asp	
210 215 220	
gtg aac agt gtt caa ttt agt att tta aac aat cca gtg gat acg gaa	720
Val Asn Ser Val Gln Phe Ser Ile Leu Asn Asn Pro Val Asp Thr Glu	

225		230		235		240	
ttc att aat aag ttc tta gag ttt tcg aat aga gta tac gaa gct ctc							768
Phe Ile Asn Lys	Phe Leu Glu Phe Ser Asn Arg Val Tyr Glu Ala Leu						
	245		250		255		
tat tac gtt cac tcg ttg ctt tat tct agt atg act tct gat tca aaa							816
Tyr Tyr Val	His Ser Leu Leu Tyr Ser Ser Met Thr Ser Asp Ser Lys						
	260		265		270		
agt atc gaa aac aaa cat cag aga aga cta gtt aaa cta ctg ctg tga							864
Ser Ile Glu Asn Lys His Gln Arg Arg Leu Val Lys Leu Leu Leu *							
	275		280		285		

<210> 252
 <211> 287
 <212> PRT
 <213> vaccinia virus

<400> 252

Met Asp Glu Ile Val Lys Asn Ile Arg Glu Gly Thr His Val Leu Leu															
1		5					10						15		
Pro Phe Tyr	Glu Thr Leu Pro Glu Leu Asn Leu Ser Leu Gly Lys Ser														
	20					25						30			
Pro Leu Pro Ser Leu Glu Tyr Gly Ala Asn Tyr Phe Leu Gln Ile Ser															
	35					40						45			
Arg Val Asn Asp Leu Asn Arg Met Pro Thr Asp Met Leu Lys Leu Phe															
	50				55					60					
Thr His Asp Ile Met Leu Pro Glu Ser Asp Leu Asp Lys Val Tyr Glu															
	65			70					75					80	
Ile Leu Lys Ile Asn Ser Val Lys Tyr Tyr Gly Arg Ser Thr Lys Ala															
		85					90						95		
Asp Ala Val Val Ala Asp Leu Ser Ala Arg Asn Lys Leu Phe Lys Arg															
	100					105						110			
Glu Arg Asp Ala Ile Lys Ser Asn Asn His Leu Thr Glu Asn Asn Leu															
	115					120						125			
Tyr Ile Ser Asp Tyr Lys Met Leu Thr Phe Asp Val Phe Arg Pro Leu															
	130				135						140				
Phe Asp Phe Val Asn Glu Lys Tyr Cys Ile Ile Lys Leu Pro Thr Leu															
	145			150					155						160
Phe Gly Arg Gly Val Ile Asp Thr Met Arg Ile Tyr Cys Ser Leu Phe															
		165					170							175	
Lys Asn Val Arg Leu Leu Lys Cys Val Ser Asp Ser Trp Leu Lys Asp															
	180					185						190			
Ser Ala Ile Met Val Ala Ser Asp Val Cys Lys Lys Asn Leu Asp Leu															
	195					200						205			
Phe Met Ser His Val Lys Ser Val Thr Lys Ser Ser Ser Trp Lys Asp															
	210				215							220			
Val Asn Ser Val Gln Phe Ser Ile Leu Asn Asn Pro Val Asp Thr Glu															
	225			230					235						240
Phe Ile Asn Lys Phe Leu Glu Phe Ser Asn Arg Val Tyr Glu Ala Leu															
		245						250						255	
Tyr Tyr Val His Ser Leu Leu Tyr Ser Ser Met Thr Ser Asp Ser Lys															
		260					265					270			
Ser Ile Glu Asn Lys His Gln Arg Arg Leu Val Lys Leu Leu Leu															
	275					280						285			

<210> 253
 <211> 1656
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1656)

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<400> 253
atg aat aat act atc att aat tct ttg atc ggt ggg gat gac tct att 48
Met Asn Asn Thr Ile Ile Asn Ser Leu Ile Gly Gly Asp Asp Ser Ile
  1             5             10             15

aaa cgg tct aat gtc ttc gca gtc gat agt caa att cca act tta tat 96
Lys Arg Ser Asn Val Phe Ala Val Asp Ser Gln Ile Pro Thr Leu Tyr
             20             25             30

atg ccg caa tat att tct cta tcc gga gtt atg aca aac gat ggt cca 144
Met Pro Gln Tyr Ile Ser Leu Ser Gly Val Met Thr Asn Asp Gly Pro
             35             40             45

gac aat cag gct atc gct agc ttc gaa att agg gat cag tat att act 192
Asp Asn Gln Ala Ile Ala Ser Phe Glu Ile Arg Asp Gln Tyr Ile Thr
             50             55             60

gcg ctt aat cat ttg gtt ctg agt ttg gaa ctt cca gaa gtt aaa ggt 240
Ala Leu Asn His Leu Val Leu Ser Leu Glu Leu Pro Glu Val Lys Gly
             65             70             75             80

atg gga aga ttc ggt tac gta cca tat gtt gga tat aaa tgt att aat 288
Met Gly Arg Phe Gly Tyr Val Pro Tyr Val Gly Tyr Lys Cys Ile Asn
             85             90             95

tac gta tcg gtc tct tcg tgt aac ggt gtt att tgg gaa att gag ggc 336
Tyr Val Ser Val Ser Ser Cys Asn Gly Val Ile Trp Glu Ile Glu Gly
             100             105             110

gaa gaa tta tat aat aat tgt atc aat aat aca att gct ttg aaa cac 384
Glu Glu Leu Tyr Asn Asn Cys Ile Asn Asn Thr Ile Ala Leu Lys His
             115             120             125

tct gga tat tct agt gaa ctt aat gat att tct att ggc cta act cct 432
Ser Gly Tyr Ser Ser Glu Leu Asn Asp Ile Ser Ile Gly Leu Thr Pro
             130             135             140

aat gac act att aaa gaa cca tct aca gta tac gtt tat att aaa act 480
Asn Asp Thr Ile Lys Glu Pro Ser Thr Val Tyr Val Tyr Ile Lys Thr
             145             150             155             160

ccg ttt gat gtg gaa gat aca ttc agc agt ctt aaa cta tcc gat tca 528
Pro Phe Asp Val Glu Asp Thr Phe Ser Ser Leu Lys Leu Ser Asp Ser
             165             170             175

aaa att acc gta acg gta acc ttc aat cca gta tcc gat atc gtt att 576
Lys Ile Thr Val Thr Val Thr Phe Asn Pro Val Ser Asp Ile Val Ile
             180             185             190

cgt gac tct tcg ttc gac ttt gaa acg ttc aac aaa gaa ttt gtt tat 624

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Arg	Asp	Ser	Ser	Phe	Asp	Phe	Glu	Thr	Phe	Asn	Lys	Glu	Phe	Val	Tyr		
		195					200					205					
gtt	cct	gaa	ttg	agc	ttt	att	gga	tat	atg	gtt	aag	aat	gta	caa	att	672	
Val	Pro	Glu	Leu	Ser	Phe	Ile	Gly	Tyr	Met	Val	Lys	Asn	Val	Gln	Ile		
	210					215					220						
aaa	cca	tcg	ttt	ata	gag	aaa	cct	agg	aga	gta	ata	ggg	caa	ata	aac	720	
Lys	Pro	Ser	Phe	Ile	Glu	Lys	Pro	Arg	Arg	Val	Ile	Gly	Gln	Ile	Asn		
225					230					235					240		
caa	cca	acg	gcg	act	gta	act	gaa	gtt	cat	gcg	gca	aca	tcg	ctc	tct	768	
Gln	Pro	Thr	Ala	Thr	Val	Thr	Glu	Val	His	Ala	Ala	Thr	Ser	Leu	Ser		
				245					250					255			
gtt	tat	act	aaa	cct	tat	tat	gga	aat	acg	gat	aat	aaa	ttt	att	tcg	816	
Val	Tyr	Thr	Lys	Pro	Tyr	Tyr	Gly	Asn	Thr	Asp	Asn	Lys	Phe	Ile	Ser		
			260					265					270				
tat	cca	ggg	tac	tca	caa	gat	gaa	aaa	gat	tat	ata	gat	gca	tat	gtg	864	
Tyr	Pro	Gly	Tyr	Ser	Gln	Asp	Glu	Lys	Asp	Tyr	Ile	Asp	Ala	Tyr	Val		
		275					280					285					
agt	aga	ttg	ttg	gat	gat	cta	gtt	att	gtt	agt	gat	ggc	cca	ccg	act	912	
Ser	Arg	Leu	Leu	Asp	Asp	Leu	Val	Ile	Val	Ser	Asp	Gly	Pro	Pro	Thr		
		290				295					300						
ggg	tat	ccg	gag	tct	gcc	gag	att	gtt	gag	gtt	cca	gaa	gat	ggg	atc	960	
Gly	Tyr	Pro	Glu	Ser	Ala	Glu	Ile	Val	Glu	Val	Pro	Glu	Asp	Gly	Ile		
305					310					315					320		
gtt	tct	att	caa	gat	gct	gat	gtg	tat	gta	aaa	att	gat	aat	gtt	cct	1008	
Val	Ser	Ile	Gln	Asp	Ala	Asp	Val	Tyr	Val	Lys	Ile	Asp	Asn	Val	Pro		
				325					330					335			
gat	aat	atg	agt	gtt	tat	ctt	cat	act	aat	ctg	cta	atg	ttt	gga	aca	1056	
Asp	Asn	Met	Ser	Val	Tyr	Leu	His	Thr	Asn	Leu	Leu	Met	Phe	Gly	Thr		
				340				345					350				
cga	aaa	aat	tct	ttt	ata	tat	aac	att	tct	aaa	aag	ttt	tcc	gcc	att	1104	
Arg	Lys	Asn	Ser	Phe	Ile	Tyr	Asn	Ile	Ser	Lys	Lys	Phe	Ser	Ala	Ile		
		355					360					365					
act	gga	aca	tat	agt	gat	gcc	act	aag	aga	aca	atc	ttt	gct	cac	ata	1152	
Thr	Gly	Thr	Tyr	Ser	Asp	Ala	Thr	Lys	Arg	Thr	Ile	Phe	Ala	His	Ile		
	370					375					380						
tca	cat	agt	atc	aac	atc	atc	gat	aca	tct	att	cct	gta	agt	ctt	tgg	1200	
Ser	His	Ser	Ile	Asn	Ile	Ile	Asp	Thr	Ser	Ile	Pro	Val	Ser	Leu	Trp		
					390					395					400		
act	agt	caa	cgt	aac	gtc	tat	aac	gga	gat	aat	aga	tca	gcc	gaa	tca	1248	
Thr	Ser	Gln	Arg	Asn	Val	Tyr	Asn	Gly	Asp	Asn	Arg	Ser	Ala	Glu	Ser		
				405					410					415			
aag	gcc	aag	gat	ttg	ttc	att	aac	gat	ccc	ttc	atc	aag	gga	ata	gat	1296	
Lys	Ala	Lys	Asp	Leu	Phe	Ile	Asn	Asp	Pro	Phe	Ile	Lys	Gly	Ile	Asp		
			420					425					430				

ttt aag aat aag acc gat att att tct aga cta gaa gtt aga ttt gga.	1344
Phe Lys Asn Lys Thr Asp Ile Ile Ser Arg Leu Glu Val Arg Phe Gly	
435 440 445	
aat gat gtt cta tat tca gag aac gga ccc atc tcg aga att tat aat	1392
Asn Asp Val Leu Tyr Ser Glu Asn Gly Pro Ile Ser Arg Ile Tyr Asn	
450 455 460	
gaa cta ctg aca aaa agc aat aat gga aca aga acc cta act ttt aac	1440
Glu Leu Leu Thr Lys Ser Asn Asn Gly Thr Arg Thr Leu Thr Phe Asn	
465 470 475 480	
ttt aca cca aag ata ttc ttt agg ccg aca act att acg gct aat gta	1488
Phe Thr Pro Lys Ile Phe Phe Arg Pro Thr Thr Ile Thr Ala Asn Val	
485 490 495	
tct agg ggg aaa gat aaa cta tct gtt cga gta gtt tat tcc acc atg	1536
Ser Arg Gly Lys Asp Lys Leu Ser Val Arg Val Val Tyr Ser Thr Met	
500 505 510	
gat gtc aac cat cca atc tat tat gta caa aaa caa ttg gta gtt gta	1584
Asp Val Asn His Pro Ile Tyr Tyr Val Gln Lys Gln Leu Val Val Val	
515 520 525	
tgt aat gac ctg tat aag gta tct tac gat caa ggg gta agt att acc	1632
Cys Asn Asp Leu Tyr Lys Val Ser Tyr Asp Gln Gly Val Ser Ile Thr	
530 535 540	
aag att atg gga gat aat aac taa	1656
Lys Ile Met Gly Asp Asn Asn *	
545 550	

<210> 254
 <211> 551
 <212> PRT
 <213> vaccinia virus

<400> 254

Met Asn Asn Thr Ile Ile Asn Ser Leu Ile Gly Gly Asp Asp Ser Ile	
1 5 10 15	
Lys Arg Ser Asn Val Phe Ala Val Asp Ser Gln Ile Pro Thr Leu Tyr	
20 25 30	
Met Pro Gln Tyr Ile Ser Leu Ser Gly Val Met Thr Asn Asp Gly Pro	
35 40 45	
Asp Asn Gln Ala Ile Ala Ser Phe Glu Ile Arg Asp Gln Tyr Ile Thr	
50 55 60	
Ala Leu Asn His Leu Val Leu Ser Leu Glu Leu Pro Glu Val Lys Gly	
65 70 75 80	
Met Gly Arg Phe Gly Tyr Val Pro Tyr Val Gly Tyr Lys Cys Ile Asn	
85 90 95	
Tyr Val Ser Val Ser Ser Cys Asn Gly Val Ile Trp Glu Ile Glu Gly	
100 105 110	
Glu Glu Leu Tyr Asn Asn Cys Ile Asn Asn Thr Ile Ala Leu Lys His	
115 120 125	
Ser Gly Tyr Ser Ser Glu Leu Asn Asp Ile Ser Ile Gly Leu Thr Pro	
130 135 140	
Asn Asp Thr Ile Lys Glu Pro Ser Thr Val Tyr Val Tyr Ile Lys Thr	
145 150 155 160	

<222> (1)...(450)

<400> 255

atg gct aag cga gta agc ctt cca gat gtg gtt att tca gca cct aaa	48
Met Ala Lys Arg Val Ser Leu Pro Asp Val Val Ile Ser Ala Pro Lys	
1 5 10 15	
gca gtc ttt aag ccc gct aaa gaa gaa gca ctc gct tgt ata cta cca	96
Ala Val Phe Lys Pro Ala Lys Glu Glu Ala Leu Ala Cys Ile Leu Pro	
20 25 30	
aag tat tat aaa tct atg gca gat gtg tct att aag aca aat agt gta	144
Lys Tyr Tyr Lys Ser Met Ala Asp Val Ser Ile Lys Thr Asn Ser Val	
35 40 45	
att gat aag tgt tgg ttt tgt aat caa gat ttg gtt ttt aaa cct att	192
Ile Asp Lys Cys Trp Phe Cys Asn Gln Asp Leu Val Phe Lys Pro Ile	
50 55 60	
agt att gag aca ttc aag ggt ggt gaa gtt ggg tat ttc tgt tct aaa	240
Ser Ile Glu Thr Phe Lys Gly Gly Glu Val Gly Tyr Phe Cys Ser Lys	
65 70 75 80	
ata tgt agg gat tcg ttg gcg tct atg gtt aag tct cac gta gct ctt	288
Ile Cys Arg Asp Ser Leu Ala Ser Met Val Lys Ser His Val Ala Leu	
85 90 95	
aga gaa gaa cca aaa att tct ttg ttg cct tta gta ttc tat gaa gat	336
Arg Glu Glu Pro Lys Ile Ser Leu Leu Pro Leu Val Phe Tyr Glu Asp	
100 105 110	
aag gaa aag gtt ata aat aca ata aac tta cta aga gat aaa gac ggc	384
Lys Glu Lys Val Ile Asn Thr Ile Asn Leu Leu Arg Asp Lys Asp Gly	
115 120 125	
gtt tac gga agc tgt tac ttt aag gaa aac tca caa att ata gat att	432
Val Tyr Gly Ser Cys Tyr Phe Lys Glu Asn Ser Gln Ile Ile Asp Ile	
130 135 140	
tct cta cgg agt tta ttg	450
Ser Leu Arg Ser Leu Leu	
145 150	

<210> 256

<211> 150

<212> PRT

<213> vaccinia virus

<400> 256

Met Ala Lys Arg Val Ser Leu Pro Asp Val Val Ile Ser Ala Pro Lys	
1 5 10 15	
Ala Val Phe Lys Pro Ala Lys Glu Glu Ala Leu Ala Cys Ile Leu Pro	
20 25 30	
Lys Tyr Tyr Lys Ser Met Ala Asp Val Ser Ile Lys Thr Asn Ser Val	
35 40 45	
Ile Asp Lys Cys Trp Phe Cys Asn Gln Asp Leu Val Phe Lys Pro Ile	
50 55 60	
Ser Ile Glu Thr Phe Lys Gly Gly Glu Val Gly Tyr Phe Cys Ser Lys	

65		70		75		80
Ile Cys Arg Asp Ser	Leu Ala Ser Met	Val Lys Ser His	Val Ala Leu			
	85	90	95			
Arg Glu Glu Pro Lys	Ile Ser Leu Leu	Pro Leu Val Phe	Tyr Glu Asp			
	100	105	110			
Lys Glu Lys Val Ile	Asn Thr Ile Asn	Leu Leu Arg Asp	Lys Asp Gly			
	115	120	125			
Val Tyr Gly Ser Cys	Tyr Phe Lys Glu	Asn Ser Gln Ile	Ile Asp Ile			
	130	135	140			
Ser Leu Arg Ser Leu	Leu					
145	150					

<210> 257
 <211> 675
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(675)

<400> 257	
atg aat cta cga tta tgt agc ggt tgt aga cac aac ggt ata gta tct	48
Met Asn Leu Arg Leu Cys Ser Gly Cys Arg His Asn Gly Ile Val Ser	
1 5 10 15	
gaa caa gga tat gaa tat tgt att ttt tgc gag tcg gta ttt caa aaa	96
Glu Gln Gly Tyr Glu Tyr Cys Ile Phe Cys Glu Ser Val Phe Gln Lys	
20 25 30	
tgt aca aag gta caa aaa aag tca aac ttc cac gtg tct aat aaa ctt	144
Cys Thr Lys Val Gln Lys Lys Ser Asn Phe His Val Ser Asn Lys Leu	
35 40 45	
att cat ttg aga aat gta ttg cgg aga tta ttg tct cat caa tgt tct	192
Ile His Leu Arg Asn Val Leu Arg Arg Leu Leu Ser His Gln Cys Ser	
50 55 60	
gga gaa att atc tcg gaa ctc ttg gat atc atg gaa aaa aat caa ata	240
Gly Glu Ile Ile Ser Glu Leu Leu Asp Ile Met Glu Lys Asn Gln Ile	
65 70 75 80	
tcc acg gat gat gta gat gca aat ttt gta tct agt ttt ctt aag gct	288
Ser Thr Asp Asp Val Asp Ala Asn Phe Val Ser Ser Phe Leu Lys Ala	
85 90 95	
aac gag aga ata aat aaa aag gat tat aag tta gtc ttt gaa ata atc	336
Asn Glu Arg Ile Asn Lys Lys Asp Tyr Lys Leu Val Phe Glu Ile Ile	
100 105 110	
aat caa gta aaa gat gag aaa ctg aat ctg agt aca gaa aag att aat	384
Asn Gln Val Lys Asp Glu Lys Leu Asn Leu Ser Thr Glu Lys Ile Asn	
115 120 125	
gaa gta gta gaa ata ttt aag cac ttg gta ttc ttt tgc caa gaa aac	432
Glu Val Val Glu Ile Phe Lys His Leu Val Phe Phe Cys Gln Glu Asn	
130 135 140	

act cct tct aag aca att aat tat tca ttc ttt ttg gat aaa ata ttc	480
Thr Pro Ser Lys Thr Ile Asn Tyr Ser Phe Phe Leu Asp Lys Ile Phe	
145 150 155 160	
gat atc act tct gta act aaa aat cta aaa cct caa act gtt aaa aat	528
Asp Ile Thr Ser Val Thr Lys Asn Leu Lys Pro Gln Thr Val Lys Asn	
165 170 175	
tat acg aaa aat aat agt aac caa tta gta tgg gaa aac ttt tta gca	576
Tyr Thr Lys Asn Asn Ser Asn Gln Leu Val Trp Glu Asn Phe Leu Ala	
180 185 190	
cat atg aga tct aaa aaa cgt gta act atg gta gag gat tat gga cac	624
His Met Arg Ser Lys Lys Arg Val Thr Met Val Glu Asp Tyr Gly His	
195 200 205	
gag tat gtt ttt gta gat gag agg ttt tct act tgc tca tta gaa gta	672
Glu Tyr Val Phe Val Asp Glu Arg Phe Ser Thr Cys Ser Leu Glu Val	
210 215 220	
taa	675
*	

<210> 258
 <211> 224
 <212> PRT
 <213> vaccinia virus

<400> 258

Met Asn Leu Arg Leu Cys Ser Gly Cys Arg His Asn Gly Ile Val Ser	
1 5 10 15	
Glu Gln Gly Tyr Glu Tyr Cys Ile Phe Cys Glu Ser Val Phe Gln Lys	
20 25 30	
Cys Thr Lys Val Gln Lys Lys Ser Asn Phe His Val Ser Asn Lys Leu	
35 40 45	
Ile His Leu Arg Asn Val Leu Arg Arg Leu Leu Ser His Gln Cys Ser	
50 55 60	
Gly Glu Ile Ile Ser Glu Leu Leu Asp Ile Met Glu Lys Asn Gln Ile	
65 70 75 80	
Ser Thr Asp Asp Val Asp Ala Asn Phe Val Ser Ser Phe Leu Lys Ala	
85 90 95	
Asn Glu Arg Ile Asn Lys Lys Asp Tyr Lys Leu Val Phe Glu Ile Ile	
100 105 110	
Asn Gln Val Lys Asp Glu Lys Leu Asn Leu Ser Thr Glu Lys Ile Asn	
115 120 125	
Glu Val Val Glu Ile Phe Lys His Leu Val Phe Phe Cys Gln Glu Asn	
130 135 140	
Thr Pro Ser Lys Thr Ile Asn Tyr Ser Phe Phe Leu Asp Lys Ile Phe	
145 150 155 160	
Asp Ile Thr Ser Val Thr Lys Asn Leu Lys Pro Gln Thr Val Lys Asn	
165 170 175	
Tyr Thr Lys Asn Asn Ser Asn Gln Leu Val Trp Glu Asn Phe Leu Ala	
180 185 190	
His Met Arg Ser Lys Lys Arg Val Thr Met Val Glu Asp Tyr Gly His	
195 200 205	
Glu Tyr Val Phe Val Asp Glu Arg Phe Ser Thr Cys Ser Leu Glu Val	
210 215 220	

<210> 259
 <211> 228
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(228)

<400> 259
 atg agt tgg tac gaa aaa tat aac att gta ctg aat ccg cct aag cgg 48
 Met Ser Trp Tyr Glu Lys Tyr Asn Ile Val Leu Asn Pro Pro Lys Arg
 1 5 10 15
 tgt tct tct gca tgt gcg gat aat tta act act ata ttg gcg gag gac 96
 Cys Ser Ser Ala Cys Ala Asp Asn Leu Thr Thr Ile Leu Ala Glu Asp
 20 25 30
 ggt aac cat att agg gcg ata ctt tat tca cag ccc aaa aaa cta aaa 144
 Gly Asn His Ile Arg Ala Ile Leu Tyr Ser Gln Pro Lys Lys Leu Lys
 35 40 45
 ata tta cag gat ttt ctg gca acg tct aga aat aaa atg ttt tta tat 192
 Ile Leu Gln Asp Phe Leu Ala Thr Ser Arg Asn Lys Met Phe Leu Tyr
 50 55 60
 aaa ata ttg gac gac gag ata cgt aga gtg tta aca 228
 Lys Ile Leu Asp Asp Glu Ile Arg Arg Val Leu Thr
 65 70 75

<210> 260
 <211> 76
 <212> PRT
 <213> vaccinia virus

<400> 260
 Met Ser Trp Tyr Glu Lys Tyr Asn Ile Val Leu Asn Pro Pro Lys Arg
 1 5 10 15
 Cys Ser Ser Ala Cys Ala Asp Asn Leu Thr Thr Ile Leu Ala Glu Asp
 20 25 30
 Gly Asn His Ile Arg Ala Ile Leu Tyr Ser Gln Pro Lys Lys Leu Lys
 35 40 45
 Ile Leu Gln Asp Phe Leu Ala Thr Ser Arg Asn Lys Met Phe Leu Tyr
 50 55 60
 Lys Ile Leu Asp Asp Glu Ile Arg Arg Val Leu Thr
 65 70 75

<210> 261
 <211> 1935
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1935)

<400> 261

atg gaa gcc gtg gtc aat agc gat gtt ttt tta aca tct aac gca gga	48
Met Glu Ala Val Val Asn Ser Asp Val Phe Leu Thr Ser Asn Ala Gly	
1 5 10 15	
cta aaa tct agt tat act aat caa act ctt tct ttg gta gat gaa gat	96
Leu Lys Ser Ser Tyr Thr Asn Gln Thr Leu Ser Leu Val Asp Glu Asp	
20 25 30	
cat att cac act tct gat aaa tct ttg tct tgt agt gta tgc aat tca	144
His Ile His Thr Ser Asp Lys Ser Leu Ser Cys Ser Val Cys Asn Ser	
35 40 45	
tta tcc aaa att gta gac gat gac ttt ata tcc gca ggg gct aga aat	192
Leu Ser Lys Ile Val Asp Asp Phe Ile Ser Ala Gly Ala Arg Asn	
50 55 60	
caa cgt acc aaa cct aaa cgt gca gga aat aat caa tct caa cag cct	240
Gln Arg Thr Lys Pro Lys Arg Ala Gly Asn Asn Gln Ser Gln Gln Pro	
65 70 75 80	
atc aaa aag gat tgt atg gtt tcc atc gac gaa gta gca tcc acg cat	288
Ile Lys Lys Asp Cys Met Val Ser Ile Asp Glu Val Ala Ser Thr His	
85 90 95	
gat tgg agt acg aga ttg aga aat gat ggg aat gca att gct aaa tat	336
Asp Trp Ser Thr Arg Leu Arg Asn Asp Gly Asn Ala Ile Ala Lys Tyr	
100 105 110	
cta act act aac aag tat gac aca tct aac ttt act att cag gat atg	384
Leu Thr Thr Asn Lys Tyr Asp Thr Ser Asn Phe Thr Ile Gln Asp Met	
115 120 125	
ctt aac att atg aat aaa cta aat att gtc aga aca aat aga aac gag	432
Leu Asn Ile Met Asn Lys Leu Asn Ile Val Arg Thr Asn Arg Asn Glu	
130 135 140	
cta ttt caa ctc ctt acc cat gta aag agc aca ttg aac aat gct agt	480
Leu Phe Gln Leu Leu Thr His Val Lys Ser Thr Leu Asn Asn Ala Ser	
145 150 155 160	
gtt tct gtg aaa tgt act cat cct tta gta ctt att cat tct cga gct	528
Val Ser Val Lys Cys Thr His Pro Leu Val Leu Ile His Ser Arg Ala	
165 170 175	
agt cct aga atc ggt gac caa ctc aaa gag tta gat aaa ata tac tct	576
Ser Pro Arg Ile Gly Asp Gln Leu Lys Glu Leu Asp Lys Ile Tyr Ser	
180 185 190	
cca tct aat cat cat att ctt ctg tcg act aca cga ttc caa tcc atg	624
Pro Ser Asn His His Ile Leu Leu Ser Thr Thr Arg Phe Gln Ser Met	
195 200 205	
cat ttt acc gat atg tct agt tca caa gat ttg tct ttt att tat aga	672
His Phe Thr Asp Met Ser Ser Ser Gln Asp Leu Ser Phe Ile Tyr Arg	
210 215 220	
aaa cca gaa act aat tac tat att cat cct att ctg atg gca cta ttc	720
Lys Pro Glu Thr Asn Tyr Tyr Ile His Pro Ile Leu Met Ala Leu Phe	

225	230	235	240	
ggt att aaa ctt cct gcg ctc gag aac gcg tat gta cat gga gac acc				768
Gly Ile Lys Leu Pro Ala Leu Glu Asn Ala Tyr Val His Gly Asp Thr	245	250	255	
tat agc cta atc cag caa ctt tat gaa ttt aga aaa gta aag tct tat				816
Tyr Ser Leu Ile Gln Gln Leu Tyr Glu Phe Arg Lys Val Lys Ser Tyr	260	265	270	
aat tat atg ttg ttg gtt aat cgt ctt acg gag gat aat ccg ata gtg				864
Asn Tyr Met Leu Leu Val Asn Arg Leu Thr Glu Asp Asn Pro Ile Val	275	280	285	
att aca ggt gta tca gat cta att tcc aca gag att cag aga gca aac				912
Ile Thr Gly Val Ser Asp Leu Ile Ser Thr Glu Ile Gln Arg Ala Asn	290	295	300	
atg cat acc atg att aga aaa gca att atg aac att aga atg gga att				960
Met His Thr Met Ile Arg Lys Ala Ile Met Asn Ile Arg Met Gly Ile	305	310	315	320
ttt tat tgt aac gat gat gat gcg gta gat ccc cat cta atg aag att				1008
Phe Tyr Cys Asn Asp Asp Asp Ala Val Asp Pro His Leu Met Lys Ile	325	330	335	
att cat act gga tgc tct caa gtt atg aca gat gag gaa cag ata ttg				1056
Ile His Thr Gly Cys Ser Gln Val Met Thr Asp Glu Glu Gln Ile Leu	340	345	350	
gct tct att ttg tct ata gtt gga ttt aga cct acg ttg gtt tct gtg				1104
Ala Ser Ile Leu Ser Ile Val Gly Phe Arg Pro Thr Leu Val Ser Val	355	360	365	
gct aga cct ata aac ggc atc agt tac gat atg aaa ctt cag gcg gca				1152
Ala Arg Pro Ile Asn Gly Ile Ser Tyr Asp Met Lys Leu Gln Ala Ala	370	375	380	
cca tac ata gtt gtt aat cct atg aag atg atc aca aca tcc gac agt				1200
Pro Tyr Ile Val Val Asn Pro Met Lys Met Ile Thr Thr Ser Asp Ser	385	390	395	400
ccg att tct atc aat tcc aag gat att tat tct atg gca ttc gat ggc				1248
Pro Ile Ser Ile Asn Ser Lys Asp Ile Tyr Ser Met Ala Phe Asp Gly	405	410	415	
aat agt gga aga gtg gtg ttc gct cct cct aac ata ggc tat gga aga				1296
Asn Ser Gly Arg Val Val Phe Ala Pro Asn Ile Gly Tyr Gly Arg	420	425	430	
tgt tct gga gtt aca cac att gat cca ttg gga act aat gtg atg ggt				1344
Cys Ser Gly Val Thr His Ile Asp Pro Leu Gly Thr Asn Val Met Gly	435	440	445	
agt gct gtt cat tcc cct gtt atc gtt aat gga gca atg atg ttt tat				1392
Ser Ala Val His Ser Pro Val Ile Val Asn Gly Ala Met Met Phe Tyr	450	455	460	
gta gaa cga cgt cag aat aag aat atg ttt ggt gga gaa tgt tac acc				1440

Val	Glu	Arg	Arg	Gln	Asn	Lys	Asn	Met	Phe	Gly	Gly	Glu	Cys	Tyr	Thr	
465					470					475					480	
ggc	ttt	aga	tct	cta	ata	gat	gat	act	ccg	att	gac	gta	tca	cca	gaa	1488
Gly	Phe	Arg	Ser	Leu	Ile	Asp	Asp	Thr	Pro	Ile	Asp	Val	Ser	Pro	Glu	
				485					490					495		
atc	atg	cta	aac	ggc	atc	atg	tat	agg	tta	aag	tcc	gca	gtt	tgt	tac	1536
Ile	Met	Leu	Asn	Gly	Ile	Met	Tyr	Arg	Leu	Lys	Ser	Ala	Val	Cys	Tyr	
			500					505					510			
aaa	ctc	gga	gac	caa	ttc	ttt	gat	tgt	gga	tcg	tct	gat	atc	ttc	ttg	1584
Lys	Leu	Gly	Asp	Gln	Phe	Phe	Asp	Cys	Gly	Ser	Ser	Asp	Ile	Phe	Leu	
		515					520					525				
aag	gga	cat	tat	acg	att	cta	ttt	aca	gaa	aat	gga	ccc	tggt	atg	tac	1632
Lys	Gly	His	Tyr	Thr	Ile	Leu	Phe	Thr	Glu	Asn	Gly	Pro	Trp	Met	Tyr	
	530					535					540					
gat	cct	ctt	tct	gtt	ttc	aat	ccg	gga	gct	aga	aat	gct	aga	ttg	atg	1680
Asp	Pro	Leu	Ser	Val	Phe	Asn	Pro	Gly	Ala	Arg	Asn	Ala	Arg	Leu	Met	
545					550					555					560	
cga	gct	ctc	aaa	aac	cag	tac	aag	aaa	tta	tca	atg	gat	tca	gac	gat	1728
Arg	Ala	Leu	Lys	Asn	Gln	Tyr	Lys	Lys	Leu	Ser	Met	Asp	Ser	Asp	Asp	
				565					570					575		
ggc	ttt	tat	gaa	tggt	ttg	aat	ggc	gac	ggc	tca	gta	ttt	gct	gcc	tca	1776
Gly	Phe	Tyr	Glu	Trp	Leu	Asn	Gly	Asp	Gly	Ser	Val	Phe	Ala	Ala	Ser	
			580					585					590			
aaa	cag	caa	atg	ttg	atg	aat	cac	gtt	gct	aac	ttt	gac	gac	gat	ctt	1824
Lys	Gln	Gln	Met	Leu	Met	Asn	His	Val	Ala	Asn	Phe	Asp	Asp	Asp	Leu	
		595					600					605				
cta	act	atg	gaa	gaa	gcc	atg	tcg	atg	att	tcg	aga	cat	tgt	tgt	atc	1872
Leu	Thr	Met	Glu	Glu	Ala	Met	Ser	Met	Ile	Ser	Arg	His	Cys	Cys	Ile	
		610				615					620					
tta	att	tat	gca	cag	gat	tat	gat	caa	tat	att	agc	gct	aga	cat	att	1920
Leu	Ile	Tyr	Ala	Gln	Asp	Tyr	Asp	Gln	Tyr	Ile	Ser	Ala	Arg	His	Ile	
625					630					635					640	
aca	gaa	cta	ttt	tag												1935
Thr	Glu	Leu	Phe	*												

<210> 262
 <211> 644
 <212> PRT
 <213> vaccinia virus

<400> 262
 Met Glu Ala Val Val Asn Ser Asp Val Phe Leu Thr Ser Asn Ala Gly
 1 5 10 15
 Leu Lys Ser Ser Tyr Thr Asn Gln Thr Leu Ser Leu Val Asp Glu Asp
 20 25 30
 His Ile His Thr Ser Asp Lys Ser Leu Ser Cys Ser Val Cys Asn Ser

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Lys Leu Gly Asp Gln Phe Phe Asp Cys Gly Ser Ser Asp Ile Phe Leu
 515 520 525
 Lys Gly His Tyr Thr Ile Leu Phe Thr Glu Asn Gly Pro Trp Met Tyr
 530 535 540
 Asp Pro Leu Ser Val Phe Asn Pro Gly Ala Arg Asn Ala Arg Leu Met
 545 550 555 560
 Arg Ala Leu Lys Asn Gln Tyr Lys Lys Leu Ser Met Asp Ser Asp Asp
 565 570 575
 Gly Phe Tyr Glu Trp Leu Asn Gly Asp Gly Ser Val Phe Ala Ala Ser
 580 585 590
 Lys Gln Gln Met Leu Met Asn His Val Ala Asn Phe Asp Asp Asp Leu
 595 600 605
 Leu Thr Met Glu Glu Ala Met Ser Met Ile Ser Arg His Cys Cys Ile
 610 615 620
 Leu Ile Tyr Ala Gln Asp Tyr Asp Gln Tyr Ile Ser Ala Arg His Ile
 625 630 635 640
 Thr Glu Leu Phe

<210> 263
 <211> 846
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(846)

<400> 263
 atg gac ttc ttt aac aag ttc tca cag ggg ctg gca gaa tcc tct aca 48
 Met Asp Phe Phe Asn Lys Phe Ser Gln Gly Leu Ala Glu Ser Ser Thr
 1 5 10 15

 cca aag tcg tca atc tat tat tct gaa gaa aag gat ccg gat acg aaa 96
 Pro Lys Ser Ser Ile Tyr Tyr Ser Glu Glu Lys Asp Pro Asp Thr Lys
 20 25 30

 aag gat gaa gcg att gaa ata gga cta aag tct caa gag tcg tat tat 144
 Lys Asp Glu Ala Ile Glu Ile Gly Leu Lys Ser Gln Glu Ser Tyr Tyr
 35 40 45

 caa aga cag ttg cga gaa caa cta gct aga gat aat atg atg gcc gcc 192
 Gln Arg Gln Leu Arg Glu Gln Leu Ala Arg Asp Asn Met Met Ala Ala
 50 55 60

 agc aga cag oct atc caa ccg cta caa cca act att cat ata act cca 240
 Ser Arg Gln Pro Ile Gln Pro Leu Gln Pro Thr Ile His Ile Thr Pro
 65 70 75 80

 cag ccg gtt ccg gtt ccg aca cct aca tcg gct cct att ctt cta cct 288
 Gln Pro Val Pro Val Pro Thr Pro Thr Ser Ala Pro Ile Leu Leu Pro
 85 90 95

 agt agt act gct cct aca cca aaa cca cga caa caa act aat aca tca 336
 Ser Ser Thr Ala Pro Thr Pro Lys Pro Arg Gln Gln Thr Asn Thr Ser
 100 105 110

 tct gat atg tct aat ctt ttt gat tgg ctg tct gca gat act gat gcg 384

Ser	Asp	Met	Ser	Asn	Leu	Phe	Asp	Trp	Leu	Ser	Ala	Asp	Thr	Asp	Ala		
		115					120					125					
ccg	gcg	agt	tca	ctc	ctt	cca	gcg	ttg	acg	ccg	agc	aat	gct	gtt	cag	432	
Pro	Ala	Ser	Ser	Leu	Leu	Pro	Ala	Leu	Thr	Pro	Ser	Asn	Ala	Val	Gln		
		130				135					140						
gat	att	atc	tct	aaa	ttt	aat	aaa	gat	caa	aag	acg	acg	aca	ccg	cca	480	
Asp	Ile	Ile	Ser	Lys	Phe	Asn	Lys	Asp	Gln	Lys	Thr	Thr	Thr	Pro	Pro		
145					150					155					160		
tct	acc	caa	cct	tct	cag	acg	tta	cca	aca	act	aca	tgt	aca	caa	caa	528	
Ser	Thr	Gln	Pro	Ser	Gln	Thr	Leu	Pro	Thr	Thr	Thr	Cys	Thr	Gln	Gln		
				165					170					175			
tcg	gat	gga	aat	att	tct	tgt	act	act	cca	acg	gtt	aca	cct	cct	caa	576	
Ser	Asp	Gly	Asn	Ile	Ser	Cys	Thr	Thr	Pro	Thr	Val	Thr	Pro	Pro	Gln		
			180					185					190				
cct	cct	att	gtg	gcc	act	gta	tgt	act	cct	aca	cct	act	ggg	ggg	aca	624	
Pro	Pro	Ile	Val	Ala	Thr	Val	Cys	Thr	Pro	Thr	Pro	Thr	Gly	Gly	Thr		
		195					200					205					
gta	tgt	aca	aca	gca	caa	caa	aat	cca	gga	gca	aca	tct	caa	caa	aat	672	
Val	Cys	Thr	Thr	Ala	Gln	Gln	Asn	Pro	Gly	Ala	Thr	Ser	Gln	Gln	Asn		
		210				215					220						
cta	gac	gat	atg	gcc	ctt	aag	gat	ctc	atg	tcg	aat	gtt	gaa	aga	gat	720	
Leu	Asp	Asp	Met	Ala	Leu	Lys	Asp	Leu	Met	Ser	Asn	Val	Glu	Arg	Asp		
225					230				235						240		
atg	cac	caa	ctt	cag	gcc	gaa	aca	aac	gat	ctg	gtg	acg	aac	gta	tat	768	
Met	His	Gln	Leu	Gln	Ala	Glu	Thr	Asn	Asp	Leu	Val	Thr	Asn	Val	Tyr		
				245					250					255			
gat	gca	agg	gag	tat	acg	cgt	agg	gca	ata	gat	caa	att	cta	caa	tta	816	
Asp	Ala	Arg	Glu	Tyr	Thr	Arg	Arg	Ala	Ile	Asp	Gln	Ile	Leu	Gln	Leu		
			260					265					270				
gtc	aaa	ggg	ttt	gaa	cga	ttc	caa	aag	taa							846	
Val	Lys	Gly	Phe	Glu	Arg	Phe	Gln	Lys	*								
		275					280										

<210> 264
 <211> 281
 <212> PRT
 <213> vaccinia virus

<400> 264
 Met Asp Phe Phe Asn Lys Phe Ser Gln Gly Leu Ala Glu Ser Ser Thr
 1 5 10 15
 Pro Lys Ser Ser Ile Tyr Tyr Ser Glu Glu Lys Asp Pro Asp Thr Lys
 20 25 30
 Lys Asp Glu Ala Ile Glu Ile Gly Leu Lys Ser Gln Glu Ser Tyr Tyr
 35 40 45
 Gln Arg Gln Leu Arg Glu Gln Leu Ala Arg Asp Asn Met Met Ala Ala
 50 55 60
 Ser Arg Gln Pro Ile Gln Pro Leu Gln Pro Thr Ile His Ile Thr Pro

65	Gln	Pro	Val	Pro	Val	Pro	Thr	Pro	Thr	Ser	Ala	Pro	Ile	Leu	Leu	Pro	80
				85						90					95		
	Ser	Ser	Thr	Ala	Pro	Thr	Pro	Lys	Pro	Arg	Gln	Gln	Thr	Asn	Thr	Ser	
				100					105					110			
	Ser	Asp	Met	Ser	Asn	Leu	Phe	Asp	Trp	Leu	Ser	Ala	Asp	Thr	Asp	Ala	
			115					120					125				
	Pro	Ala	Ser	Ser	Leu	Leu	Pro	Ala	Leu	Thr	Pro	Ser	Asn	Ala	Val	Gln	
			130				135					140					
	Asp	Ile	Ile	Ser	Lys	Phe	Asn	Lys	Asp	Gln	Lys	Thr	Thr	Thr	Pro	Pro	
145					150						155					160	
	Ser	Thr	Gln	Pro	Ser	Gln	Thr	Leu	Pro	Thr	Thr	Thr	Cys	Thr	Gln	Gln	
				165					170						175		
	Ser	Asp	Gly	Asn	Ile	Ser	Cys	Thr	Thr	Pro	Thr	Val	Thr	Pro	Pro	Gln	
			180					185						190			
	Pro	Pro	Ile	Val	Ala	Thr	Val	Cys	Thr	Pro	Thr	Pro	Thr	Gly	Gly	Thr	
			195					200					205				
	Val	Cys	Thr	Thr	Ala	Gln	Gln	Asn	Pro	Gly	Ala	Thr	Ser	Gln	Gln	Asn	
		210				215						220					
	Leu	Asp	Asp	Met	Ala	Leu	Lys	Asp	Leu	Met	Ser	Asn	Val	Glu	Arg	Asp	
225					230					235						240	
	Met	His	Gln	Leu	Gln	Ala	Glu	Thr	Asn	Asp	Leu	Val	Thr	Asn	Val	Tyr	
				245					250						255		
	Asp	Ala	Arg	Glu	Tyr	Thr	Arg	Arg	Ala	Ile	Asp	Gln	Ile	Leu	Gln	Leu	
			260					265						270			
	Val	Lys	Gly	Phe	Glu	Arg	Phe	Gln	Lys								
		275						280									

<210> 265
 <211> 495
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(495)

<400> 265	
atg gca gac aca gac gat att atc gac tat gaa tcc gat gat ctc act	48
Met Ala Asp Thr Asp Asp Ile Ile Asp Tyr Glu Ser Asp Asp Leu Thr	
1 5 10 15	
gaa tac gag gat gat gaa gaa gag gaa gaa gat gga gag tca cta gaa	96
Glu Tyr Glu Asp Asp Glu Glu Glu Glu Glu Asp Gly Glu Ser Leu Glu	
20 25 30	
act agt gat ata gat ccc aaa tct tct tat aag att gta gaa tca gca	144
Thr Ser Asp Ile Asp Pro Lys Ser Ser Tyr Lys Ile Val Glu Ser Ala	
35 40 45	
tcc act cat ata gaa gat gcg cat tcc aat ctt aaa cat ata ggg aat	192
Ser Thr His Ile Glu Asp Ala His Ser Asn Leu Lys His Ile Gly Asn	
50 55 60	
cat ata tct gct ctt aaa cga cgc tat act aga cgt ata agt cta ttt	240
His Ile Ser Ala Leu Lys Arg Arg Tyr Thr Arg Arg Ile Ser Leu Phe	
65 70 75 80	

gaa ata gcg ggt ata ata gca gaa agc tat aac ttg ctt caa cga gga	288
Glu Ile Ala Gly Ile Ile Ala Glu Ser Tyr Asn Leu Leu Gln Arg Gly	
85 90 95	
aga tta cct cta gtt tca gaa ttt tct gac gaa acg atg aag caa aat	336
Arg Leu Pro Leu Val Ser Glu Phe Ser Asp Glu Thr Met Lys Gln Asn	
100 105 110	
atg cta cat gta att ata caa gag ata gag gag ggt tct tgt cct ata	384
Met Leu His Val Ile Ile Gln Glu Ile Glu Glu Gly Ser Cys Pro Ile	
115 120 125	
gtc atc gaa aag aac gga gaa ttg ttg tcg gta aac gat ttt gac aaa	432
Val Ile Glu Lys Asn Gly Glu Leu Leu Ser Val Asn Asp Phe Asp Lys	
130 135 140	
gat ggt cta aaa ttc cat cta gac tat att atc aaa att tgg aaa ctt	480
Asp Gly Leu Lys Phe His Leu Asp Tyr Ile Ile Lys Ile Trp Lys Leu	
145 150 155 160	
caa aaa cga tat tag	495
Gln Lys Arg Tyr *	

<210> 266
 <211> 164
 <212> PRT
 <213> vaccinia virus

<400> 266																	
Met	Ala	Asp	Thr	Asp	Asp	Ile	Ile	Asp	Tyr	Glu	Ser	Asp	Asp	Leu	Thr		
1				5					10					15			
Glu	Tyr	Glu	Asp	Asp	Glu	Glu	Glu	Glu	Glu	Asp	Gly	Glu	Ser	Leu	Glu		
			20					25					30				
Thr	Ser	Asp	Ile	Asp	Pro	Lys	Ser	Ser	Tyr	Lys	Ile	Val	Glu	Ser	Ala		
		35				40						45					
Ser	Thr	His	Ile	Glu	Asp	Ala	His	Ser	Asn	Leu	Lys	His	Ile	Gly	Asn		
		50			55						60						
His	Ile	Ser	Ala	Leu	Lys	Arg	Arg	Tyr	Thr	Arg	Arg	Ile	Ser	Leu	Phe		
65				70					75					80			
Glu	Ile	Ala	Gly	Ile	Ile	Ala	Glu	Ser	Tyr	Asn	Leu	Leu	Gln	Arg	Gly		
			85					90					95				
Arg	Leu	Pro	Leu	Val	Ser	Glu	Phe	Ser	Asp	Glu	Thr	Met	Lys	Gln	Asn		
		100				105						110					
Met	Leu	His	Val	Ile	Ile	Gln	Glu	Ile	Glu	Glu	Gly	Ser	Cys	Pro	Ile		
		115				120					125						
Val	Ile	Glu	Lys	Asn	Gly	Glu	Leu	Leu	Ser	Val	Asn	Asp	Phe	Asp	Lys		
130				135						140							
Asp	Gly	Leu	Lys	Phe	His	Leu	Asp	Tyr	Ile	Ile	Lys	Ile	Trp	Lys	Leu		
145				150					155						160		
Gln	Lys	Arg	Tyr														

<210> 267
 <211> 1119
 <212> DNA
 <213> vaccinia virus

<220>

<221> CDS

<222> (1)...(1119)

<400> 267

atg gac aaa ctt aga gtt cta tac gat gag ttc gtc acc att agt aaa	48
Met Asp Lys Leu Arg Val Leu Tyr Asp Glu Phe Val Thr Ile Ser Lys	
1 5 10 15	
gat aat ctt gaa cgc gag act ggt ctt agc gca tca gat gtt gat atg	96
Asp Asn Leu Glu Arg Glu Thr Gly Leu Ser Ala Ser Asp Val Asp Met	
20 25 30	
gat ttt gat tta aac att ttt atg acg ttg gtt cca gtc ttg gag aaa	144
Asp Phe Asp Leu Asn Ile Phe Met Thr Leu Val Pro Val Leu Glu Lys	
35 40 45	
aag gta tgc gct att aca cca act ata gaa gat gat aaa atc gta act	192
Lys Val Cys Ala Ile Thr Pro Thr Ile Glu Asp Asp Lys Ile Val Thr	
50 55 60	
atg atg aaa tat tgt agt tat cag agt ttt tca ttc tgg ttc ctt aaa	240
Met Met Lys Tyr Cys Ser Tyr Gln Ser Phe Ser Phe Trp Phe Leu Lys	
65 70 75 80	
tct ggt gcc gtt gtg aaa tcg gta tat aat aaa cta gat gat gtg aaa	288
Ser Gly Ala Val Val Lys Ser Val Tyr Asn Lys Leu Asp Asp Val Lys	
85 90 95	
aag gaa aag ttt gta gcc aca ttt aga gac atg ttg ctc aat gta caa	336
Lys Glu Lys Phe Val Ala Thr Phe Arg Asp Met Leu Leu Asn Val Gln	
100 105 110	
act cta att tct ctt aac tct atg tat act aga ttg cgt caa gat acc	384
Thr Leu Ile Ser Leu Asn Ser Met Tyr Thr Arg Leu Arg Gln Asp Thr	
115 120 125	
gaa gat att gta tcc gat tcc aaa aaa ata atg gag atc gtt tcc cat	432
Glu Asp Ile Val Ser Asp Ser Lys Lys Ile Met Glu Ile Val Ser His	
130 135 140	
ttg aga gcg tcg act aca gag aac gcg gcg tat caa gtt ctc caa caa	480
Leu Arg Ala Ser Thr Thr Glu Asn Ala Ala Tyr Gln Val Leu Gln Gln	
145 150 155 160	
aac aat agt ttt atc ata tct aca cta aat aaa atc tta tct gat gaa	528
Asn Asn Ser Phe Ile Ile Ser Thr Leu Asn Lys Ile Leu Ser Asp Glu	
165 170 175	
aac tat ctc ttg aaa att att gca gta ttc gac tct aaa cta att tct	576
Asn Tyr Leu Leu Lys Ile Ile Ala Val Phe Asp Ser Lys Leu Ile Ser	
180 185 190	
gaa aag gag aca ttg aat gaa tac aaa caa ttg tac acc att tct tct	624
Glu Lys Glu Thr Leu Asn Glu Tyr Lys Gln Leu Tyr Thr Ile Ser Ser	
195 200 205	
gaa agt ttg gta tac gga atc aga tgc gtt agt aat ctg gat ata tca	672
Glu Ser Leu Val Tyr Gly Ile Arg Cys Val Ser Asn Leu Asp Ile Ser	

210	215	220	
tct gtt caa ctg agt aac aat aaa tac gtt ctc ttt gtt aag aaa atg			720
Ser Val Gln Leu Ser Asn Asn Lys Tyr Val Leu Phe Val Lys Lys Met			
225	230	235	240
cta cct aaa atc ata ctg ttt cag aat aac gac atc aat gca caa caa			768
Leu Pro Lys Ile Ile Leu Phe Gln Asn Asn Asp Ile Asn Ala Gln Gln			
	245	250	255
ttc gct aat gtt att tct aaa att tat acg ttg att tat aga caa ttg			816
Phe Ala Asn Val Ile Ser Lys Ile Tyr Thr Leu Ile Tyr Arg Gln Leu			
	260	265	270
acg tcg aat gtc gat gtt gga tgt cta ttg aca gat acg ata gaa tct			864
Thr Ser Asn Val Asp Val Gly Cys Leu Leu Thr Asp Thr Ile Glu Ser			
	275	280	285
gcc aaa act aaa ata tct gta gaa aaa att aaa cag acg ggt atc aat			912
Ala Lys Thr Lys Ile Ser Val Glu Lys Ile Lys Gln Thr Gly Ile Asn			
	290	295	300
aat gtt caa agt ctt atc aaa ttc ata tct gat aac aag aaa gaa tat			960
Asn Val Gln Ser Leu Ile Lys Phe Ile Ser Asp Asn Lys Lys Glu Tyr			
	305	310	320
aag aca ata atc tct gaa gaa tat cta tcg aag gaa gat aga atc att			1008
Lys Thr Ile Ile Ser Glu Glu Tyr Leu Ser Lys Glu Asp Arg Ile Ile			
	325	330	335
act att ttg caa gat atc gtt aat gaa cac gat ata aag tac gac aat			1056
Thr Ile Leu Gln Asp Ile Val Asn Glu His Asp Ile Lys Tyr Asp Asn			
	340	345	350
aaa ttg ctg aac atg cga gac ttg att gtg aca ttt aga gaa cga tat			1104
Lys Leu Leu Asn Met Arg Asp Leu Ile Val Thr Phe Arg Glu Arg Tyr			
	355	360	365
tcg tat aaa ttc taa			1119
Ser Tyr Lys Phe *			
370			

<210> 268

<211> 372

<212> PRT

<213> vaccinia virus

<400> 268

Met Asp Lys Leu Arg Val Leu Tyr Asp Glu Phe Val Thr Ile Ser Lys	
1	5 10 15
Asp Asn Leu Glu Arg Glu Thr Gly Leu Ser Ala Ser Asp Val Asp Met	
	20 25 30
Asp Phe Asp Leu Asn Ile Phe Met Thr Leu Val Pro Val Leu Glu Lys	
	35 40 45
Lys Val Cys Ala Ile Thr Pro Thr Ile Glu Asp Asp Lys Ile Val Thr	
	50 55 60
Met Met Lys Tyr Cys Ser Tyr Gln Ser Phe Ser Phe Trp Phe Leu Lys	
65	70 75 80

Ser	Gly	Ala	Val	Val	Lys	Ser	Val	Tyr	Asn	Lys	Leu	Asp	Asp	Val	Lys	
				85					90					95		
Lys	Glu	Lys	Phe	Val	Ala	Thr	Phe	Arg	Asp	Met	Leu	Leu	Asn	Val	Gln	
			100					105					110			
Thr	Leu	Ile	Ser	Leu	Asn	Ser	Met	Tyr	Thr	Arg	Leu	Arg	Gln	Asp	Thr	
		115					120					125				
Glu	Asp	Ile	Val	Ser	Asp	Ser	Lys	Lys	Ile	Met	Glu	Ile	Val	Ser	His	
	130					135					140					
Leu	Arg	Ala	Ser	Thr	Thr	Glu	Asn	Ala	Ala	Tyr	Gln	Val	Leu	Gln	Gln	
145					150					155					160	
Asn	Asn	Ser	Phe	Ile	Ile	Ser	Thr	Leu	Asn	Lys	Ile	Leu	Ser	Asp	Glu	
			165						170					175		
Asn	Tyr	Leu	Leu	Lys	Ile	Ile	Ala	Val	Phe	Asp	Ser	Lys	Leu	Ile	Ser	
		180						185					190			
Glu	Lys	Glu	Thr	Leu	Asn	Glu	Tyr	Lys	Gln	Leu	Tyr	Thr	Ile	Ser	Ser	
	195					200						205				
Glu	Ser	Leu	Val	Tyr	Gly	Ile	Arg	Cys	Val	Ser	Asn	Leu	Asp	Ile	Ser	
	210					215					220					
Ser	Val	Gln	Leu	Ser	Asn	Asn	Lys	Tyr	Val	Leu	Phe	Val	Lys	Lys	Met	
225					230					235					240	
Leu	Pro	Lys	Ile	Ile	Leu	Phe	Gln	Asn	Asn	Asp	Ile	Asn	Ala	Gln	Gln	
			245					250						255		
Phe	Ala	Asn	Val	Ile	Ser	Lys	Ile	Tyr	Thr	Leu	Ile	Tyr	Arg	Gln	Leu	
		260						265					270			
Thr	Ser	Asn	Val	Asp	Val	Gly	Cys	Leu	Leu	Thr	Asp	Thr	Ile	Glu	Ser	
		275					280					285				
Ala	Lys	Thr	Lys	Ile	Ser	Val	Glu	Lys	Ile	Lys	Gln	Thr	Gly	Ile	Asn	
	290					295					300					
Asn	Val	Gln	Ser	Leu	Ile	Lys	Phe	Ile	Ser	Asp	Asn	Lys	Lys	Glu	Tyr	
305					310					315					320	
Lys	Thr	Ile	Ile	Ser	Glu	Glu	Tyr	Leu	Ser	Lys	Glu	Asp	Arg	Ile	Ile	
			325					330						335		
Thr	Ile	Leu	Gln	Asp	Ile	Val	Asn	Glu	His	Asp	Ile	Lys	Tyr	Asp	Asn	
		340						345					350			
Lys	Leu	Leu	Asn	Met	Arg	Asp	Leu	Ile	Val	Thr	Phe	Arg	Glu	Arg	Tyr	
	355						360					365				
Ser	Tyr	Lys	Phe													
	370															

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 <211> 2133
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
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<400> 269																
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Met	Arg	Tyr	Ile	Val	Ser	Pro	Gln	Leu	Val	Leu	Gln	Val	Gly	Lys	Gly	
1				5					10					15		
cag	gag	gta	gaa	cga	gcc	cta	tat	ctc	act	cca	tat	gat	tac	ata	gat	96
Gln	Glu	Val	Glu	Arg	Ala	Leu	Tyr	Leu	Thr	Pro	Tyr	Asp	Tyr	Ile	Asp	
			20					25					30			
gag	aag	tcg	ccc	ata	tat	tat	ttt	tta	cga	agt	cat	tta	aat	ata	caa	144

Glu	Lys	Ser	Pro	Ile	Tyr	Tyr	Phe	Leu	Arg	Ser	His	Leu	Asn	Ile	Gln	
		35					40					45				
cag	ccg	gaa	ata	gtt	aag	aga	cat	att	cta	ttg	acg	ctt	cga	atg	act	192
Gln	Pro	Glu	Ile	Val	Lys	Arg	His	Ile	Leu	Leu	Thr	Leu	Arg	Met	Thr	
	50					55					60					
caa	tta	aag	gga	tat	tta	gga	aat	ttg	tta	gat	att	aag	gac	gat	att	240
Gln	Leu	Lys	Gly	Tyr	Leu	Gly	Asn	Leu	Leu	Asp	Ile	Lys	Asp	Asp	Ile	
	65				70					75					80	
att	atc	tat	tct	cat	aag	aat	aat	ttg	gaa	tat	agt	tac	gtt	gat	aat	288
Ile	Ile	Tyr	Ser	His	Lys	Asn	Asn	Leu	Glu	Tyr	Ser	Tyr	Val	Asp	Asn	
				85					90					95		
act	att	ttt	aat	ccc	ttc	gta	tat	act	cag	aaa	aaa	aca	cta	cta	aaa	336
Thr	Ile	Phe	Asn	Pro	Phe	Val	Tyr	Thr	Gln	Lys	Lys	Thr	Leu	Leu	Lys	
			100					105					110			
aac	gat	agc	ttt	tta	tac	aat	gta	tat	cct	gga	gcg	tgt	gac	ttt	ttg	384
Asn	Asp	Ser	Phe	Leu	Tyr	Asn	Val	Tyr	Pro	Gly	Ala	Cys	Asp	Phe	Leu	
		115					120					125				
gtt	atc	tgg	gtg	gct	aga	gcg	tgc	gat	aca	tct	att	ccg	gaa	ttt	gga	432
Val	Ile	Trp	Val	Ala	Arg	Ala	Cys	Asp	Thr	Ser	Ile	Pro	Glu	Phe	Gly	
	130					135					140					
tcg	tac	gaa	gat	gta	gat	aat	aat	att	atc	aag	ttt	gaa	aca	atg	ttg	480
Ser	Tyr	Glu	Asp	Val	Asp	Asn	Asn	Ile	Ile	Lys	Phe	Glu	Thr	Met	Leu	
					150					155					160	
atg	gaa	gta	ttt	cca	caa	cta	gat	ttg	gac	att	act	gta	gaa	tca	aag	528
Met	Glu	Val	Phe	Pro	Gln	Leu	Asp	Leu	Asp	Ile	Thr	Val	Glu	Ser	Lys	
				165					170					175		
ttt	aac	aat	ata	ttt	cgt	acc	aat	cta	aaa	cta	act	ggg	tta	aaa	aag	576
Phe	Asn	Asn	Ile	Phe	Arg	Thr	Asn	Leu	Lys	Leu	Thr	Gly	Leu	Lys	Lys	
			180					185					190			
atc	att	cag	cga	gtt	caa	gac	ttg	gac	att	aat	tat	aag	tcg	ttg	tta	624
Ile	Ile	Gln	Arg	Val	Gln	Asp	Leu	Asp	Ile	Asn	Tyr	Lys	Ser	Leu	Leu	
		195					200					205				
tct	aga	tac	gat	gaa	cac	ttt	att	aat	atg	acc	ggg	aat	cat	ttt	att	672
Ser	Arg	Tyr	Asp	Glu	His	Phe	Ile	Asn	Met	Thr	Gly	Asn	His	Phe	Ile	
	210					215					220					
cta	aac	gat	gaa	cag	tta	aat	ctc	tcc	att	tgg	gac	ttg	gat	ggg	aca	720
Leu	Asn	Asp	Glu	Gln	Leu	Asn	Leu	Ser	Ile	Trp	Asp	Leu	Asp	Gly	Thr	
	225				230					235					240	
tta	gcg	tta	tct	agc	gac	ggc	gat	acc	gtg	atg	att	aat	aac	gta	aaa	768
Leu	Ala	Leu	Ser	Ser	Asp	Gly	Asp	Thr	Val	Met	Ile	Asn	Asn	Val	Lys	
				245					250					255		
cta	ttt	aca	gat	ctt	gtg	tcc	gat	ata	gat	aca	caa	atg	gaa	cgc	atc	816
Leu	Phe	Thr	Asp	Leu	Val	Ser	Asp	Ile	Asp	Thr	Gln	Met	Glu	Arg	Ile	
			260					265					270			

aag gga gat ata acg tat aag gta cat ttg gcg act cct atc aat tct	864
Lys Gly Asp Ile Thr Tyr Lys Val His Leu Ala Thr Pro Ile Asn Ser	
275 280 285	
aga ata aaa ttg gat atc gag act agc ttc att ttt ata gag acg gcg	912
Arg Ile Lys Leu Asp Ile Glu Thr Ser Phe Ile Phe Ile Glu Thr Ala	
290 295 300	
act aat aat att tta cta tcc tcg gat aaa aaa ata tct atc att ttg	960
Thr Asn Asn Ile Leu Leu Ser Ser Asp Lys Lys Ile Ser Ile Ile Leu	
305 310 315 320	
gcc aaa aac cat ata tct att aaa gtg aaa aac cat att cct aac ata	1008
Ala Lys Asn His Ile Ser Ile Lys Val Lys Asn His Ile Pro Asn Ile	
325 330 335	
gaa aaa tat ttt aca ttt tta gtt att gcc att aat gcc atg ttt aat	1056
Glu Lys Tyr Phe Thr Phe Leu Val Ile Ala Ile Asn Ala Met Phe Asn	
340 345 350	
agc gtt caa aag tct gct gat ttt acc aaa gtg gaa act gtt tac tgg	1104
Ser Val Gln Lys Ser Ala Asp Phe Thr Lys Val Glu Thr Val Tyr Trp	
355 360 365	
tct agg ata tgc caa aat aca aag aat aag aat aga aaa ccc atc att	1152
Ser Arg Ile Cys Gln Asn Thr Lys Asn Lys Asn Arg Lys Pro Ile Ile	
370 375 380	
att aat tat cta gat cct gga atg aaa aaa atc agt aac aac ttt tac	1200
Ile Asn Tyr Leu Asp Pro Gly Met Lys Lys Ile Ser Asn Asn Phe Tyr	
385 390 395 400	
aga tcc gat gag aaa gaa gtc ttt att aat gat aac ggc ata atg ttt	1248
Arg Ser Asp Glu Lys Glu Val Phe Ile Asn Asp Asn Gly Ile Met Phe	
405 410 415	
acg tgc atg gat cct ttg ggg aaa tat aat aag gtg gga ttt ctt aat	1296
Thr Cys Met Asp Pro Leu Gly Lys Tyr Asn Lys Val Gly Phe Leu Asn	
420 425 430	
ata ttt cat gat atg cgg aaa tat tgt atc cct tgt tgt ttt cta cat	1344
Ile Phe His Asp Met Arg Lys Tyr Cys Ile Pro Cys Cys Phe Leu His	
435 440 445	
gat caa tct cat cga agt aca ttt tca tcg tgt gtt cat caa att gac	1392
Asp Gln Ser His Arg Ser Thr Phe Ser Ser Cys Val His Gln Ile Asp	
450 455 460	
gtt gaa aaa aag ata gta agt ccg tat atc ctt aat ttt ggt aaa gtt	1440
Val Glu Lys Lys Ile Val Ser Pro Tyr Ile Leu Asn Phe Gly Lys Val	
465 470 475 480	
gta aca gaa tcc aaa atg tca ttt ctc cct att atc ttt gac gcc ttc	1488
Val Thr Glu Ser Lys Met Ser Phe Leu Pro Ile Ile Phe Asp Ala Phe	
485 490 495	
tta aat gat gga atg act gct aat atg gaa caa gat aat aaa cga cta	1536
Leu Asn Asp Gly Met Thr Ala Asn Met Glu Gln Asp Asn Lys Arg Leu	
500 505 510	

aag gaa act agt gga tat cat ata gtt aga tgt tgt gct ggt gat gat	1584
Lys Glu Thr Ser Gly Tyr His Ile Val Arg Cys Cys Ala Gly Asp Asp	
515 520 525	
ata gtt cgt tta cga act aca tct gat att att cag ttt gta aac gag	1632
Ile Val Arg Leu Arg Thr Ser Asp Ile Ile Gln Phe Val Asn Glu	
530 535 540	
gat aaa aat att ctt ata gtt aac gac atg gta tat ttt cca atg aac	1680
Asp Lys Asn Ile Leu Ile Val Asn Asp Met Val Tyr Phe Pro Met Asn	
545 550 555 560	
gcg tcc gat ata gga aag aaa ata cat ata ctc att caa gaa ata gtt	1728
Ala Ser Asp Ile Gly Lys Lys Ile His Ile Leu Ile Gln Glu Ile Val	
565 570 575	
cat gag gta atg ata gta aaa aag aaa gag tct agt gat aaa atc gat	1776
His Glu Val Met Ile Val Lys Lys Lys Glu Ser Ser Asp Lys Ile Asp	
580 585 590	
ttt ttc cca ccc aac tat aag tta ttg aag gat cta ttt cca aaa caa	1824
Phe Phe Pro Pro Asn Tyr Lys Leu Leu Lys Asp Leu Phe Pro Lys Gln	
595 600 605	
act att caa act cct att caa tct gac gcg gga atg gtg tta aca acc	1872
Thr Ile Gln Thr Pro Ile Gln Ser Asp Ala Gly Met Val Leu Thr Thr	
610 615 620	
gat gga ttc tac ata gat gga aaa ctt ttt aac gaa gat ctg tcg tct	1920
Asp Gly Phe Tyr Ile Asp Gly Lys Leu Phe Asn Glu Asp Leu Ser Ser	
625 630 635 640	
aaa tac gtt aca ttt aca aaa aat gtt att gcg tct gat gcc gta gct	1968
Lys Tyr Val Thr Phe Thr Lys Asn Val Ile Ala Ser Asp Ala Val Ala	
645 650 655	
aaa tat ttt tct cct ttg ttt aaa tac gtt att tca gaa gct aaa gat	2016
Lys Tyr Phe Ser Pro Leu Phe Lys Tyr Val Ile Ser Glu Ala Lys Asp	
660 665 670	
aga ttt atc aaa acg tgg atg att aat att atg ata cat atg aac gta	2064
Arg Phe Ile Lys Thr Trp Met Ile Asn Ile Met Ile His Met Asn Val	
675 680 685	
gat cct aat aat ata ata ccg acg tta gaa aaa tac tat ccc aac tct	2112
Asp Pro Asn Asn Ile Ile Pro Thr Leu Glu Lys Tyr Tyr Pro Asn Ser	
690 695 700	
gga aga gca caa ata aat taa	2133
Gly Arg Ala Gln Ile Asn *	
705 710	

<210> 270
 <211> 710
 <212> PRT
 <213> vaccinia virus

<400> 270

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Gln	Glu	Val	Glu	Arg	Ala	Leu	Tyr	Leu	Thr	Pro	Tyr	Asp	Tyr	Ile	Asp
		20						25					30		
Glu	Lys	Ser	Pro	Ile	Tyr	Tyr	Phe	Leu	Arg	Ser	His	Leu	Asn	Ile	Gln
		35					40					45			
Gln	Pro	Glu	Ile	Val	Lys	Arg	His	Ile	Leu	Leu	Thr	Leu	Arg	Met	Thr
	50				55						60				
Gln	Leu	Lys	Gly	Tyr	Leu	Gly	Asn	Leu	Leu	Asp	Ile	Lys	Asp	Asp	Ile
65					70					75					80
Ile	Ile	Tyr	Ser	His	Lys	Asn	Asn	Leu	Glu	Tyr	Ser	Tyr	Val	Asp	Asn
			85						90					95	
Thr	Ile	Phe	Asn	Pro	Phe	Val	Tyr	Thr	Gln	Lys	Lys	Thr	Leu	Leu	Lys
			100					105					110		
Asn	Asp	Ser	Phe	Leu	Tyr	Asn	Val	Tyr	Pro	Gly	Ala	Cys	Asp	Phe	Leu
		115					120					125			
Val	Ile	Trp	Val	Ala	Arg	Ala	Cys	Asp	Thr	Ser	Ile	Pro	Glu	Phe	Gly
	130					135					140				
Ser	Tyr	Glu	Asp	Val	Asp	Asn	Asn	Ile	Ile	Lys	Phe	Glu	Thr	Met	Leu
145					150					155					160
Met	Glu	Val	Phe	Pro	Gln	Leu	Asp	Leu	Asp	Ile	Thr	Val	Glu	Ser	Lys
			165						170					175	
Phe	Asn	Asn	Ile	Phe	Arg	Thr	Asn	Leu	Lys	Leu	Thr	Gly	Leu	Lys	Lys
			180					185					190		
Ile	Ile	Gln	Arg	Val	Gln	Asp	Leu	Asp	Ile	Asn	Tyr	Lys	Ser	Leu	Leu
		195					200					205			
Ser	Arg	Tyr	Asp	Glu	His	Phe	Ile	Asn	Met	Thr	Gly	Asn	His	Phe	Ile
	210					215					220				
Leu	Asn	Asp	Glu	Gln	Leu	Asn	Leu	Ser	Ile	Trp	Asp	Leu	Asp	Gly	Thr
225					230					235					240
Leu	Ala	Leu	Ser	Ser	Asp	Gly	Asp	Thr	Val	Met	Ile	Asn	Asn	Val	Lys
			245						250					255	
Leu	Phe	Thr	Asp	Leu	Val	Ser	Asp	Ile	Asp	Thr	Gln	Met	Glu	Arg	Ile
		260						265					270		
Lys	Gly	Asp	Ile	Thr	Tyr	Lys	Val	His	Leu	Ala	Thr	Pro	Ile	Asn	Ser
		275					280					285			
Arg	Ile	Lys	Leu	Asp	Ile	Glu	Thr	Ser	Phe	Ile	Phe	Ile	Glu	Thr	Ala
	290					295					300				
Thr	Asn	Asn	Ile	Leu	Leu	Ser	Ser	Asp	Lys	Lys	Ile	Ser	Ile	Ile	Leu
305					310					315					320
Ala	Lys	Asn	His	Ile	Ser	Ile	Lys	Val	Lys	Asn	His	Ile	Pro	Asn	Ile
			325						330					335	
Glu	Lys	Tyr	Phe	Thr	Phe	Leu	Val	Ile	Ala	Ile	Asn	Ala	Met	Phe	Asn
			340					345					350		
Ser	Val	Gln	Lys	Ser	Ala	Asp	Phe	Thr	Lys	Val	Glu	Thr	Val	Tyr	Trp
		355					360					365			
Ser	Arg	Ile	Cys	Gln	Asn	Thr	Lys	Asn	Lys	Asn	Arg	Lys	Pro	Ile	Ile
	370					375					380				
Ile	Asn	Tyr	Leu	Asp	Pro	Gly	Met	Lys	Lys	Ile	Ser	Asn	Asn	Phe	Tyr
385					390					395					400
Arg	Ser	Asp	Glu	Lys	Glu	Val	Phe	Ile	Asn	Asp	Asn	Gly	Ile	Met	Phe
			405						410					415	
Thr	Cys	Met	Asp	Pro	Leu	Gly	Lys	Tyr	Asn	Lys	Val	Gly	Phe	Leu	Asn
			420					425					430		
Ile	Phe	His	Asp	Met	Arg	Lys	Tyr	Cys	Ile	Pro	Cys	Cys	Phe	Leu	His
		435					440					445			
Asp	Gln	Ser	His	Arg	Ser	Thr	Phe	Ser	Ser	Cys	Val	His	Gln	Ile	Asp
	450					455					460				

Val Glu Lys Lys Ile Val Ser Pro Tyr Ile Leu Asn Phe Gly Lys Val
 465 470 475 480
 Val Thr Glu Ser Lys Met Ser Phe Leu Pro Ile Ile Phe Asp Ala Phe
 485 490 495
 Leu Asn Asp Gly Met Thr Ala Asn Met Glu Gln Asp Asn Lys Arg Leu
 500 505 510
 Lys Glu Thr Ser Gly Tyr His Ile Val Arg Cys Cys Ala Gly Asp Asp
 515 520 525
 Ile Val Arg Leu Arg Thr Thr Ser Asp Ile Ile Gln Phe Val Asn Glu
 530 535 540
 Asp Lys Asn Ile Leu Ile Val Asn Asp Met Val Tyr Phe Pro Met Asn
 545 550 555 560
 Ala Ser Asp Ile Gly Lys Lys Ile His Ile Leu Ile Gln Glu Ile Val
 565 570 575
 His Glu Val Met Ile Val Lys Lys Lys Glu Ser Ser Asp Lys Ile Asp
 580 585 590
 Phe Phe Pro Asn Tyr Lys Leu Leu Lys Asp Leu Phe Pro Lys Gln
 595 600 605
 Thr Ile Gln Thr Pro Ile Gln Ser Asp Ala Gly Met Val Leu Thr Thr
 610 615 620
 Asp Gly Phe Tyr Ile Asp Gly Lys Leu Phe Asn Glu Asp Leu Ser Ser
 625 630 635 640
 Lys Tyr Val Thr Phe Thr Lys Asn Val Ile Ala Ser Asp Ala Val Ala
 645 650 655
 Lys Tyr Phe Ser Pro Leu Phe Lys Tyr Val Ile Ser Glu Ala Lys Asp
 660 665 670
 Arg Phe Ile Lys Thr Trp Met Ile Asn Ile Met Ile His Met Asn Val
 675 680 685
 Asp Pro Asn Asn Ile Ile Pro Thr Leu Glu Lys Tyr Tyr Pro Asn Ser
 690 695 700
 Gly Arg Ala Gln Ile Asn
 705 710

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 <211> 867
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(867)

<400> 271
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 ggg gag gta aat ata gat caa aca aca cct atg ata aag gaa aat agc 96
 Gly Glu Val Asn Ile Asp Gln Thr Thr Pro Met Ile Lys Glu Asn Ser
 20 25 30
 ggt ttt ata tcc cgt agt aga cgt cta ttc gcc cat aga tct aag gat 144
 Gly Phe Ile Ser Arg Ser Arg Arg Leu Phe Ala His Arg Ser Lys Asp
 35 40 45
 gat gag aga aaa cta gca cta cga ttc ttt tta caa aga ctt tat ttt 192
 Asp Glu Arg Lys Leu Ala Leu Arg Phe Phe Leu Gln Arg Leu Tyr Phe
 50 55 60

tta gat cat aga gag att cat tat ttg ttc aga tgc gtt gac gct gta	240
Leu Asp His Arg Glu Ile His Tyr Leu Phe Arg Cys Val Asp Ala Val	
65 70 75 80	
aaa gac gtc act att acc aaa aaa aat aac att atc gtg gcg cct tat	288
Lys Asp Val Thr Ile Thr Lys Lys Asn Asn Ile Ile Val Ala Pro Tyr	
85 90 95	
ata gca ctt tta act atc gca tca aaa gga tgc aaa ctt aca gaa aca	336
Ile Ala Leu Leu Thr Ile Ala Ser Lys Gly Cys Lys Leu Thr Glu Thr	
100 105 110	
atg att gaa gca ttc ttt cca gaa cta tat aat gaa cat agt aag aaa	384
Met Ile Glu Ala Phe Phe Pro Glu Leu Tyr Asn Glu His Ser Lys Lys	
115 120 125	
ttt aaa ttc aac tct caa gta tcc atc atc caa gaa aaa ctc gga tac	432
Phe Lys Phe Asn Ser Gln Val Ser Ile Ile Gln Glu Lys Leu Gly Tyr	
130 135 140	
cag ttt gga aac tat cac gtt tat gat ttt gaa ccg tat tac tct aca	480
Gln Phe Gly Asn Tyr His Val Tyr Asp Phe Glu Pro Tyr Tyr Ser Thr	
145 150 155 160	
gta gct ctg gct att cga gat gaa cat tca tct ggc att ttt aat atc	528
Val Ala Leu Ala Ile Arg Asp Glu His Ser Ser Gly Ile Phe Asn Ile	
165 170 175	
cgt caa gag agt tat ctg gta agt tca tta tct gaa ata aca tat aga	576
Arg Gln Glu Ser Tyr Leu Val Ser Ser Leu Ser Glu Ile Thr Tyr Arg	
180 185 190	
ttt tat cta att aat cta aaa tct gat ctt gtt caa tgg agt gct agt	624
Phe Tyr Leu Ile Asn Leu Lys Ser Asp Leu Val Gln Trp Ser Ala Ser	
195 200 205	
acg ggc gct gta att aat caa atg gta aat act gta ttg att aca gtg	672
Thr Gly Ala Val Ile Asn Gln Met Val Asn Thr Val Leu Ile Thr Val	
210 215 220	
tat gaa aag tta caa ctg gtc ata gaa aat gat tca caa ttt aca tgt	720
Tyr Glu Lys Leu Gln Leu Val Ile Glu Asn Asp Ser Gln Phe Thr Cys	
225 230 235 240	
tca ttg gct gtg gaa tca gaa ctt cca ata aaa tta ctt aaa gat aga	768
Ser Leu Ala Val Glu Ser Glu Leu Pro Ile Lys Leu Leu Lys Asp Arg	
245 250 255	
aat gaa tta ttt aca aaa ttc atc aac gag tta aaa aag acc agt tca	816
Asn Glu Leu Phe Thr Lys Phe Ile Asn Glu Leu Lys Lys Thr Ser Ser	
260 265 270	
ttc aag ata agc aaa cgc gat aag gat acg cta cta aaa tat ttt act	864
Phe Lys Ile Ser Lys Arg Asp Lys Asp Thr Leu Leu Lys Tyr Phe Thr	
275 280 285	
tag	867
*	

<210> 272
 <211> 288
 <212> PRT
 <213> vaccinia virus

<400> 272
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 Gly Phe Ile Ser Arg Ser Arg Arg Leu Phe Ala His Arg Ser Lys Asp
 35 40 45
 Asp Glu Arg Lys Leu Ala Leu Arg Phe Phe Leu Gln Arg Leu Tyr Phe
 50 55 60
 Leu Asp His Arg Glu Ile His Tyr Leu Phe Arg Cys Val Asp Ala Val
 65 70 75 80
 Lys Asp Val Thr Ile Thr Lys Lys Asn Asn Ile Ile Val Ala Pro Tyr
 85 90 95
 Ile Ala Leu Leu Thr Ile Ala Ser Lys Gly Cys Lys Leu Thr Glu Thr
 100 105 110
 Met Ile Glu Ala Phe Phe Pro Glu Leu Tyr Asn Glu His Ser Lys Lys
 115 120 125
 Phe Lys Phe Asn Ser Gln Val Ser Ile Ile Gln Glu Lys Leu Gly Tyr
 130 135 140
 Gln Phe Gly Asn Tyr His Val Tyr Asp Phe Glu Pro Tyr Tyr Ser Thr
 145 150 155 160
 Val Ala Leu Ala Ile Arg Asp Glu His Ser Ser Gly Ile Phe Asn Ile
 165 170 175
 Arg Gln Glu Ser Tyr Leu Val Ser Ser Leu Ser Glu Ile Thr Tyr Arg
 180 185 190
 Phe Tyr Leu Ile Asn Leu Lys Ser Asp Leu Val Gln Trp Ser Ala Ser
 195 200 205
 Thr Gly Ala Val Ile Asn Gln Met Val Asn Thr Val Leu Ile Thr Val
 210 215 220
 Tyr Glu Lys Leu Gln Leu Val Ile Glu Asn Asp Ser Gln Phe Thr Cys
 225 230 235 240
 Ser Leu Ala Val Glu Ser Glu Leu Pro Ile Lys Leu Leu Lys Asp Arg
 245 250 255
 Asn Glu Leu Phe Thr Lys Phe Ile Asn Glu Leu Lys Lys Thr Ser Ser
 260 265 270
 Phe Lys Ile Ser Lys Arg Asp Lys Asp Thr Leu Leu Lys Tyr Phe Thr
 275 280 285

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 <211> 327
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(327)

<400> 273
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 Met Ser Cys Tyr Thr Ala Ile Leu Lys Ser Val Gly Gly Leu Ala Leu
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ttt caa gta gcc aat ggc gcc ata gat tta tgt aga cat ttc ttt atg	96
Phe Gln Val Ala Asn Gly Ala Ile Asp Leu Cys Arg His Phe Phe Met	
20 25 30	
tat ttt tgt gaa caa aag cta cga cca aat tca ttt tgg ttc gtc gtt	144
Tyr Phe Cys Glu Gln Lys Leu Arg Pro Asn Ser Phe Trp Phe Val Val	
35 40 45	
gtt aga gcc att gcg agc atg ata atg tat tta gta tta ggt ata gca	192
Val Arg Ala Ile Ala Ser Met Ile Met Tyr Leu Val Leu Gly Ile Ala	
50 55 60	
ttg ctg tat att tct gaa caa gat gac aag aag aat act aat aat gcc	240
Leu Leu Tyr Ile Ser Glu Gln Asp Asp Lys Lys Asn Thr Asn Asn Ala	
65 70 75 80	
aac act aat aat gat agt aat agt aat aat agt aac aat gat aaa cga	288
Asn Thr Asn Asn Asp Ser Asn Ser Asn Asn Ser Asn Asn Asp Lys Arg	
85 90 95	
aat gag tcg tct ata aat tct aac tcc agt cct aag taa	327
Asn Glu Ser Ser Ile Asn Ser Asn Ser Ser Pro Lys *	
100 105	

<210> 274
 <211> 108
 <212> PRT
 <213> vaccinia virus

<400> 274
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Phe Gln Val Ala Asn Gly Ala Ile Asp Leu Cys Arg His Phe Phe Met
20 25 30
Tyr Phe Cys Glu Gln Lys Leu Arg Pro Asn Ser Phe Trp Phe Val Val
35 40 45
Val Arg Ala Ile Ala Ser Met Ile Met Tyr Leu Val Leu Gly Ile Ala
50 55 60
Leu Leu Tyr Ile Ser Glu Gln Asp Asp Lys Lys Asn Thr Asn Asn Ala
65 70 75 80
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Glu	Tyr	Leu	Phe	Arg	Ile	Val	Ser	Thr	Val	Leu	Pro	His	Leu	Cys	Leu		
			20					25					30				
gat	tac	aaa	gta	tgt	gac	caa	ctt	aaa	aca	acc	ttc	gtt	cat	ccg	ttc	144	
Asp	Tyr	Lys	Val	Cys	Asp	Gln	Leu	Lys	Thr	Thr	Phe	Val	His	Pro	Phe		
		35					40					45					
gat	ata	ttg	ctt	aat	aac	tca	tta	gga	tcc	gta	act	aaa	caa	gat	gag	192	
Asp	Ile	Leu	Leu	Asn	Asn	Ser	Leu	Gly	Ser	Val	Thr	Lys	Gln	Asp	Glu		
	50					55					60						
ctt	cag	gct	gct	ata	tcc	aaa	ttg	ggc	att	aat	tat	tta	att	gat	acc	240	
Leu	Gln	Ala	Ala	Ile	Ser	Lys	Leu	Gly	Ile	Asn	Tyr	Leu	Ile	Asp	Thr		
65					70					75					80		
acg	tca	cgt	gaa	tta	aaa	ctg	ttt	aat	gtt	aca	ctt	aac	gct	gga	aat	288	
Thr	Ser	Arg	Glu	Leu	Lys	Leu	Phe	Asn	Val	Thr	Leu	Asn	Ala	Gly	Asn		
				85					90				95				
ata	gat	att	att	aat	acc	cca	att	aac	att	agt	tcg	gaa	act	aac	cct	336	
Ile	Asp	Ile	Ile	Asn	Thr	Pro	Ile	Asn	Ile	Ser	Ser	Glu	Thr	Asn	Pro		
			100					105					110				
att	att	aat	act	cac	agc	ttt	tac	gat	ctt	cca	cct	ttc	act	caa	cac	384	
Ile	Ile	Asn	Thr	His	Ser	Phe	Tyr	Asp	Leu	Pro	Pro	Phe	Thr	Gln	His		
		115					120					125					
ctt	ctt	aat	att	aga	ttg	acg	gat	aca	gaa	tac	aga	gct	aga	ttt	atc	432	
Leu	Leu	Asn	Ile	Arg	Leu	Thr	Asp	Thr	Glu	Tyr	Arg	Ala	Arg	Phe	Ile		
	130					135					140						
ggt	ggt	tat	att	aaa	cca	gat	ggc	tcc	gac	tca	atg	gat	gtt	cta	gca	480	
Gly	Gly	Tyr	Ile	Lys	Pro	Asp	Gly	Ser	Asp	Ser	Met	Asp	Val	Leu	Ala		
145					150				155					160			
gaa	aag	aaa	tac	cca	gat	ctt	aac	ttt	gat	aat	act	tat	ttg	ttt	aac	528	
Glu	Lys	Lys	Tyr	Pro	Asp	Leu	Asn	Phe	Asp	Asn	Thr	Tyr	Leu	Phe	Asn		
				165					170				175				
atc	ctc	tat	aag	gat	gtt	att	aat	gca	cca	ata	aaa	gaa	ttc	aag	gca	576	
Ile	Leu	Tyr	Lys	Asp	Val	Ile	Asn	Ala	Pro	Ile	Lys	Glu	Phe	Lys	Ala		
			180					185					190				
aaa	att	gtt	aac	ggt	gta	tta	agc	aga	caa	gat	ttt	gat	aat	ctt	ata	624	
Lys	Ile	Val	Asn	Gly	Val	Leu	Ser	Arg	Gln	Asp	Phe	Asp	Asn	Leu	Ile		
		195					200					205					
ggt	gtt	aga	caa	tat	ata	aca	gca	caa	gat	cga	ccc	cgc	ttt	gac	gac	672	
Gly	Val	Arg	Gln	Tyr	Ile	Thr	Ala	Gln	Asp	Arg	Pro	Arg	Phe	Asp	Asp		
	210					215					220						
gct	tat	aac	atc	gca	gat	gct	gct	aga	cat	tat	gga	gtt	aat	ctt	aat	720	
Ala	Tyr	Asn	Ile	Ala	Asp	Ala	Ala	Arg	His	Tyr	Gly	Val	Asn	Leu	Asn		
225					230					235				240			

aca ttg cca tta cca aac gtc gat ctc act act atg cca aca tat aaa	768
Thr Leu Pro Leu Pro Asn Val Asp Leu Thr Thr Met Pro Thr Tyr Lys	
245 250 255	
cat ctc atc atg ttt gaa cag tac ttc att tat aca tat gac aga gtg	816
His Leu Ile Met Phe Glu Gln Tyr Phe Ile Tyr Thr Tyr Asp Arg Val	
260 265 270	
gat att tat tac aat ggt aac aaa atg ctc ttc gat gat gag att atg	864
Asp Ile Tyr Tyr Asn Gly Asn Lys Met Leu Phe Asp Asp Glu Ile Met	
275 280 285	
aac ttt tgt att tct atg cga tat caa tct ctt att cct aga ctg gta	912
Asn Phe Cys Ile Ser Met Arg Tyr Gln Ser Leu Ile Pro Arg Leu Val	
290 295 300	
gaa ttc ttt cca gat ata cca gta aac aat aac atc gta ctt cat act	960
Glu Phe Phe Pro Asp Ile Pro Val Asn Asn Asn Ile Val Leu His Thr	
305 310 315 320	
cga aat cct caa aat gct gca gtg aac gta aca gtt acg ctt cca aac	1008
Arg Asn Pro Gln Asn Ala Ala Val Asn Val Thr Val Thr Leu Pro Asn	
325 330 335	
gtg caa ttt gta gac ata ggt aga aac cac aaa ttc ttt att aat ttc	1056
Val Gln Phe Val Asp Ile Gly Arg Asn His Lys Phe Phe Ile Asn Phe	
340 345 350	
ttt aac ctg ttg gcg aag gaa caa aga tct acg gct atc aaa gtt acc	1104
Phe Asn Leu Leu Ala Lys Glu Gln Arg Ser Thr Ala Ile Lys Val Thr	
355 360 365	
aaa tcc atg ttt tgg gac ggt atg gat tac gag gaa tac aag tct aaa	1152
Lys Ser Met Phe Trp Asp Gly Met Asp Tyr Glu Glu Tyr Lys Ser Lys	
370 375 380	
aac ctt cag gac atg atg ttt ata aat tct acc tgt tat gta ttc ggt	1200
Asn Leu Gln Asp Met Met Phe Ile Asn Ser Thr Cys Tyr Val Phe Gly	
385 390 395 400	
ctt tat aat cac aat aat act act tat tgc tct atc ctt tct gat att	1248
Leu Tyr Asn His Asn Asn Thr Thr Tyr Cys Ser Ile Leu Ser Asp Ile	
405 410 415	
atc tcc gca gag aaa aca cct att aga gtt tgt ttg tta cct aga gta	1296
Ile Ser Ala Glu Lys Thr Pro Ile Arg Val Cys Leu Leu Pro Arg Val	
420 425 430	
gtc gga ggt aag act gtt act aat ctt att tca gaa act ttg aag agt	1344
Val Gly Gly Lys Thr Val Thr Asn Leu Ile Ser Glu Thr Leu Lys Ser	
435 440 445	
att tca tct atg act ata cga gag ttt ccc agg aaa gat aaa tct atc	1392
Ile Ser Ser Met Thr Ile Arg Glu Phe Pro Arg Lys Asp Lys Ser Ile	
450 455 460	
atg cat ata gga ctt tct gag acg gga ttc atg aga ttc ttc caa cta	1440
Met His Ile Gly Leu Ser Glu Thr Gly Phe Met Arg Phe Phe Gln Leu	
465 470 475 480	

ctc	agg	ctc	atg	gct	gat	aaa	cct	cat	gaa	acg	gct	att	aaa	gag	gtt	1488
Leu	Arg	Leu	Met	Ala	Asp	Lys	Pro	His	Glu	Thr	Ala	Ile	Lys	Glu	Val	
				485					490					495		
gtt	atg	gct	tat	gtg	ggt	ata	aag	ttg	ggt	gac	aaa	ggt	agt	ccg	tac	1536
Val	Met	Ala	Tyr	Val	Gly	Ile	Lys	Leu	Gly	Asp	Lys	Gly	Ser	Pro	Tyr	
			500					505					510			
tat	att	aga	aag	gag	tca	tac	caa	gac	ttt	atc	tat	ctg	cta	ttt	gca	1584
Tyr	Ile	Arg	Lys	Glu	Ser	Tyr	Gln	Asp	Phe	Ile	Tyr	Leu	Leu	Phe	Ala	
		515					520					525				
tca	atg	ggc	ttt	aag	gtg	act	act	aga	aga	tcc	att	atg	gga	agt	aat	1632
Ser	Met	Gly	Phe	Lys	Val	Thr	Thr	Arg	Arg	Ser	Ile	Met	Gly	Ser	Asn	
		530				535					540					
aat	atc	tct	atc	atc	agt	att	aga	cca	aga	gta	act	aaa	caa	tac	atc	1680
Asn	Ile	Ser	Ile	Ile	Ser	Ile	Arg	Pro	Arg	Val	Thr	Lys	Gln	Tyr	Ile	
545					550					555					560	
gtc	act	aca	ttg	atg	aaa	act	agt	tgt	agt	aaa	aac	gag	gca	gaa	aaa	1728
Val	Thr	Thr	Leu	Met	Lys	Thr	Ser	Cys	Ser	Lys	Asn	Glu	Ala	Glu	Lys	
				565					570					575		
tta	att	act	tca	gcg	ttt	gat	ctt	ctc	aat	ttc	atg	gta	tca	gtt	agt	1776
Leu	Ile	Thr	Ser	Ala	Phe	Asp	Leu	Leu	Asn	Phe	Met	Val	Ser	Val	Ser	
			580					585					590			
gac	ttt	aga	gat	tat	cag	agt	tac	aga	cag	tat	aga	aac	tat	tgt	cct	1824
Asp	Phe	Arg	Asp	Tyr	Gln	Ser	Tyr	Arg	Gln	Tyr	Arg	Asn	Tyr	Cys	Pro	
		595					600					605				
aga	tat	ttc	tat	gca	gga	tct	ccc	gaa	gga	gag	gaa	acc	att	atc	tgt	1872
Arg	Tyr	Phe	Tyr	Ala	Gly	Ser	Pro	Glu	Gly	Glu	Glu	Thr	Ile	Ile	Cys	
		610				615					620					
gac	tcg	gaa	ccg	ata	agt	atc	ttg	gat	aga	att	gat	act	cgt	ggt	atc	1920
Asp	Ser	Glu	Pro	Ile	Ser	Ile	Leu	Asp	Arg	Ile	Asp	Thr	Arg	Gly	Ile	
625					630					635					640	
ttt	tct	gcg	tat	act	att	aat	gaa	atg	atg	gac	act	gat	atc	ttt	tct	1968
Phe	Ser	Ala	Tyr	Thr	Ile	Asn	Glu	Met	Met	Asp	Thr	Asp	Ile	Phe	Ser	
				645					650					655		
cca	gag	aat	aag	gca	ttt	aag	aat	aat	ctg	agt	aga	ttt	atc	gag	agt	2016
Pro	Glu	Asn	Lys	Ala	Phe	Lys	Asn	Asn	Leu	Ser	Arg	Phe	Ile	Glu	Ser	
			660					665					670			
gga	gat	att	aca	gga	gaa	gat	att	ttc	tgc	gca	atg	cca	tac	aac	atc	2064
Gly	Asp	Ile	Thr	Gly	Glu	Asp	Ile	Phe	Cys	Ala	Met	Pro	Tyr	Asn	Ile	
		675					680					685				
tta	gat	agg	att	att	aca	aat	gct	ggt	acg	tgt	acc	gta	tcc	ata	ggt	2112
Leu	Asp	Arg	Ile	Ile	Thr	Asn	Ala	Gly	Thr	Cys	Thr	Val	Ser	Ile	Gly	
		690				695					700					
gat	atg	ttg	gat	aac	att	aca	acc	cag	tca	gac	tgt	aat	atg	act	aac	2160
Asp	Met	Leu	Asp	Asn	Ile	Thr	Thr	Gln	Ser	Asp	Cys	Asn	Met	Thr	Asn	

705	710	715	720	
gaa atc aca gat atg ata aac gcc tca ttg aag aat aca att tct aaa				2208
Glu Ile Thr Asp Met Ile Asn Ala Ser Leu Lys Asn Thr Ile Ser Lys	725	730	735	
gat aat aat atg cta gtc agc caa gca ttg gac tct gta gct aat cgt				2256
Asp Asn Asn Met Leu Val Ser Gln Ala Leu Asp Ser Val Ala Asn Arg	740	745	750	
tct aaa caa acg att gga gac ttg aga caa tca tcg tgt aaa atg gca				2304
Ser Lys Gln Thr Ile Gly Asp Leu Arg Gln Ser Ser Cys Lys Met Ala	755	760	765	
ttg ttg ttt aaa aat ctt gtt aca tcc atc tac aca ata gaa cgt att				2352
Leu Leu Phe Lys Asn Leu Val Thr Ser Ile Tyr Thr Ile Glu Arg Ile	770	775	780	
ttc aat gct aaa gta ggc gat gat gtt aag gca tcg atg ttg gag aag				2400
Phe Asn Ala Lys Val Gly Asp Asp Val Lys Ala Ser Met Leu Glu Lys	785	790	800	
tat aaa gta ttc aca gat att tcc atg tca ttg tat aaa gac ttg ata				2448
Tyr Lys Val Phe Thr Asp Ile Ser Met Ser Leu Tyr Lys Asp Leu Ile	805	810	815	
gct atg gag aat ctc aaa gcg atg cta tac att att cga cga agc gga				2496
Ala Met Glu Asn Leu Lys Ala Met Leu Tyr Ile Ile Arg Arg Ser Gly	820	825	830	
tgc aga ata gac gat gca caa att act act gac gat cta gtc aag tct				2544
Cys Arg Ile Asp Asp Ala Gln Ile Thr Thr Asp Asp Leu Val Lys Ser	835	840	845	
tac tca ttg atc cgt cct aaa att cta agt atg ata aac tat tat aat				2592
Tyr Ser Leu Ile Arg Pro Lys Ile Leu Ser Met Ile Asn Tyr Tyr Asn	850	855	860	
gaa atg agt aga gga tac ttt gaa cac atg aaa aaa aat cta aat atg				2640
Glu Met Ser Arg Gly Tyr Phe Glu His Met Lys Lys Asn Leu Asn Met	865	870	880	
aca gat ggt gac tct gtc tct ttt gat gat gaa				2673
Thr Asp Gly Asp Ser Val Ser Phe Asp Asp Glu	885	890		

<210> 276

<211> 891

<212> PRT

<213> vaccinia virus

<400> 276

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Asp Tyr Lys Val Cys Asp Gln Leu Lys Thr Thr Phe Val His Pro Phe				
35	40	45		

Asp	Ile	Leu	Leu	Asn	Asn	Ser	Leu	Gly	Ser	Val	Thr	Lys	Gln	Asp	Glu
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Leu	Gln	Ala	Ala	Ile	Ser	Lys	Leu	Gly	Ile	Asn	Tyr	Leu	Ile	Asp	Thr
65					70					75					80
Thr	Ser	Arg	Glu	Leu	Lys	Leu	Phe	Asn	Val	Thr	Leu	Asn	Ala	Gly	Asn
				85					90					95	
Ile	Asp	Ile	Ile	Asn	Thr	Pro	Ile	Asn	Ile	Ser	Ser	Glu	Thr	Asn	Pro
			100					105					110		
Ile	Ile	Asn	Thr	His	Ser	Phe	Tyr	Asp	Leu	Pro	Pro	Phe	Thr	Gln	His
		115					120					125			
Leu	Leu	Asn	Ile	Arg	Leu	Thr	Asp	Thr	Glu	Tyr	Arg	Ala	Arg	Phe	Ile
		130				135					140				
Gly	Gly	Tyr	Ile	Lys	Pro	Asp	Gly	Ser	Asp	Ser	Met	Asp	Val	Leu	Ala
145					150					155					160
Glu	Lys	Lys	Tyr	Pro	Asp	Leu	Asn	Phe	Asp	Asn	Thr	Tyr	Leu	Phe	Asn
				165					170					175	
Ile	Leu	Tyr	Lys	Asp	Val	Ile	Asn	Ala	Pro	Ile	Lys	Glu	Phe	Lys	Ala
			180					185					190		
Lys	Ile	Val	Asn	Gly	Val	Leu	Ser	Arg	Gln	Asp	Phe	Asp	Asn	Leu	Ile
		195					200					205			
Gly	Val	Arg	Gln	Tyr	Ile	Thr	Ala	Gln	Asp	Arg	Pro	Arg	Phe	Asp	Asp
		210				215					220				
Ala	Tyr	Asn	Ile	Ala	Asp	Ala	Ala	Arg	His	Tyr	Gly	Val	Asn	Leu	Asn
225					230					235					240
Thr	Leu	Pro	Leu	Pro	Asn	Val	Asp	Leu	Thr	Thr	Met	Pro	Thr	Tyr	Lys
				245					250					255	
His	Leu	Ile	Met	Phe	Glu	Gln	Tyr	Phe	Ile	Tyr	Thr	Tyr	Asp	Arg	Val
			260					265					270		
Asp	Ile	Tyr	Tyr	Asn	Gly	Asn	Lys	Met	Leu	Phe	Asp	Asp	Glu	Ile	Met
		275					280					285			
Asn	Phe	Cys	Ile	Ser	Met	Arg	Tyr	Gln	Ser	Leu	Ile	Pro	Arg	Leu	Val
		290				295					300				
Glu	Phe	Phe	Pro	Asp	Ile	Pro	Val	Asn	Asn	Asn	Ile	Val	Leu	His	Thr
305					310					315					320
Arg	Asn	Pro	Gln	Asn	Ala	Ala	Val	Asn	Val	Thr	Val	Thr	Leu	Pro	Asn
				325					330					335	
Val	Gln	Phe	Val	Asp	Ile	Gly	Arg	Asn	His	Lys	Phe	Phe	Ile	Asn	Phe
			340					345					350		
Phe	Asn	Leu	Leu	Ala	Lys	Glu	Gln	Arg	Ser	Thr	Ala	Ile	Lys	Val	Thr
		355					360					365			
Lys	Ser	Met	Phe	Trp	Asp	Gly	Met	Asp	Tyr	Glu	Glu	Tyr	Lys	Ser	Lys
		370				375					380				
Asn	Leu	Gln	Asp	Met	Met	Phe	Ile	Asn	Ser	Thr	Cys	Tyr	Val	Phe	Gly
385					390					395					400
Leu	Tyr	Asn	His	Asn	Asn	Thr	Thr	Tyr	Cys	Ser	Ile	Leu	Ser	Asp	Ile
				405					410					415	
Ile	Ser	Ala	Glu	Lys	Thr	Pro	Ile	Arg	Val	Cys	Leu	Leu	Pro	Arg	Val
			420					425					430		
Val	Gly	Gly	Lys	Thr	Val	Thr	Asn	Leu	Ile	Ser	Glu	Thr	Leu	Lys	Ser
		435					440					445			
Ile	Ser	Met	Thr	Ile	Arg	Glu	Phe	Pro	Arg	Lys	Asp	Lys	Ser	Ile	
		450			455					460					
Met	His	Ile	Gly	Leu	Ser	Glu	Thr	Gly	Phe	Met	Arg	Phe	Phe	Gln	Leu
465					470					475					480
Leu	Arg	Leu	Met	Ala	Asp	Lys	Pro	His	Glu	Thr	Ala	Ile	Lys	Glu	Val
				485					490					495	
Val	Met	Ala	Tyr	Val	Gly	Ile	Lys	Leu	Gly	Asp	Lys	Gly	Ser	Pro	Tyr
			500					505					510		
Tyr	Ile	Arg	Lys	Glu	Ser	Tyr	Gln	Asp	Phe	Ile	Tyr	Leu	Leu	Phe	Ala

atg	acg	acc	gta	cca	gtg	acg	gat	ata	caa	aac	gat	tta	att	aca	gag	48
Met	Thr	Thr	Val	Pro	Val	Thr	Asp	Ile	Gln	Asn	Asp	Leu	Ile	Thr	Glu	
1				5					10					15		
ttt	tca	gaa	gat	aat	tat	cca	tct	aac	aaa	aat	tat	gaa	ata	act	ctt	96
Phe	Ser	Glu	Asp	Asn	Tyr	Pro	Ser	Asn	Lys	Asn	Tyr	Glu	Ile	Thr	Leu	
			20					25					30			
cgt	caa	atg	tct	att	cta	act	cac	gtt	aac	aac	gtg	gta	gat	aga	gaa	144
Arg	Gln	Met	Ser	Ile	Leu	Thr	His	Val	Asn	Asn	Val	Val	Asp	Arg	Glu	
		35					40					45				
cat	aat	gcc	gcc	gta	gtg	tca	tct	cca	gag	gaa	ata	tcc	tca	caa	ctt	192
His	Asn	Ala	Ala	Val	Val	Ser	Ser	Pro	Glu	Glu	Ile	Ser	Ser	Gln	Leu	
	50					55					60					
aat	gaa	gat	cta	ttt	cca	gat	gat	gat	tca	ccg	gcc	act	att	atc	gaa	240
Asn	Glu	Asp	Leu	Phe	Pro	Asp	Asp	Asp	Ser	Pro	Ala	Thr	Ile	Ile	Glu	
65					70					75					80	
cga	gta	caa	cct	cat	act	act	att	att	gac	gat	act	cca	cct	cct	acg	288
Arg	Val	Gln	Pro	His	Thr	Thr	Ile	Ile	Asp	Asp	Thr	Pro	Pro	Pro	Thr	
				85					90					95		
ttt	cgt	aga	gag	tta	ttg	ata	tcg	gaa	caa	cgt	caa	caa	cga	gaa	aaa	336
Phe	Arg	Arg	Glu	Leu	Leu	Ile	Ser	Glu	Gln	Arg	Gln	Gln	Arg	Glu	Lys	
			100					105					110			
aga	ttt	aat	att	aca	gta	tcg	aaa	aat	gct	gaa	gca	ata	atg	gaa	tct	384
Arg	Phe	Asn	Ile	Thr	Val	Ser	Lys	Asn	Ala	Glu	Ala	Ile	Met	Glu	Ser	
		115					120					125				
aga	tct	atg	ata	act	tct	atg	cca	aca	caa	aca	cca	tcc	ttg	gga	gta	432
Arg	Ser	Met	Ile	Thr	Ser	Met	Pro	Thr	Gln	Thr	Pro	Ser	Leu	Gly	Val	
		130				135					140					
gtt	tat	gat	aaa	gat	aaa	aga	att	cag	atg	tta	gag	gat	gaa	gtg	gtt	480
Val	Tyr	Asp	Lys	Asp	Lys	Arg	Ile	Gln	Met	Leu	Glu	Asp	Glu	Val	Val	
145					150					155					160	
aat	ctt	aga	aat	caa	cga	tct	aat	aca	aaa	tca	tct	gat	aat	tta	gat	528
Asn	Leu	Arg	Asn	Gln	Arg	Ser	Asn	Thr	Lys	Ser	Ser	Asp	Asn	Leu	Asp	
				165					170					175		
aat	ttt	acc	aaa	ata	cta	ttt	ggt	aag	act	ccg	tac	aaa	tca	aca	gaa	576
Asn	Phe	Thr	Lys	Ile	Leu	Phe	Gly	Lys	Thr	Pro	Tyr	Lys	Ser	Thr	Glu	
			180					185					190			
gtt	aat	aag	cgt	ata	gcc	atc	gtt	aat	tat	gca	aat	ttg	aac	ggg	tct	624
Val	Asn	Lys	Arg	Ile	Ala	Ile	Val	Asn	Tyr	Ala	Asn	Leu	Asn	Gly	Ser	
		195					200					205				
ccc	tta	tca	gtc	gag	gac	ttg	gat	gtt	tgt	tca	gag	gat	gaa	ata	gat	672
Pro	Leu	Ser	Val	Glu	Asp	Leu	Asp	Val	Cys	Ser	Glu	Asp	Glu	Ile	Asp	
		210				215					220					
aga	atc	tat	aaa	acg	att	aaa	caa	tat	cac	gaa	agt	aga	aaa	cga	aaa	720
Arg	Ile	Tyr	Lys	Thr	Ile	Lys	Gln	Tyr	His	Glu	Ser	Arg	Lys	Arg	Lys	
225					230					235					240	

att atc gtc act aac gtg att att att gtc ata aac att atc gag cag	768
Ile Ile Val Thr Asn Val Ile Ile Ile Val Ile Asn Ile Ile Glu Gln	
245 250 255	
gca ttg cta aaa ctc gga ttt gaa gaa atc aaa gga ctg agt acc gat	816
Ala Leu Leu Lys Leu Gly Phe Glu Glu Ile Lys Gly Leu Ser Thr Asp	
260 265 270	
atc act tca gaa att atc gat gtg gag atc gga gat gac tgc gat gct	864
Ile Thr Ser Glu Ile Ile Asp Val Glu Ile Gly Asp Asp Cys Asp Ala	
275 280 285	
gta gca tct aaa cta gga atc ggt aac agt ccg gtt ctt aat att gta	912
Val Ala Ser Lys Leu Gly Ile Gly Asn Ser Pro Val Leu Asn Ile Val	
290 295 300	
ttg ttt ata ctc aag ata ttc gtt aaa cga att aaa att att taa	957
Leu Phe Ile Leu Lys Ile Phe Val Lys Arg Ile Lys Ile Ile *	
305 310 315	

<210> 278
 <211> 318
 <212> PRT
 <213> vaccinia virus

<400> 278

Met Thr Thr Val Pro Val Thr Asp Ile Gln Asn Asp Leu Ile Thr Glu	
1 5 10 15	
Phe Ser Glu Asp Asn Tyr Pro Ser Asn Lys Asn Tyr Glu Ile Thr Leu	
20 25 30	
Arg Gln Met Ser Ile Leu Thr His Val Asn Asn Val Val Asp Arg Glu	
35 40 45	
His Asn Ala Ala Val Val Ser Ser Pro Glu Glu Ile Ser Ser Gln Leu	
50 55 60	
Asn Glu Asp Leu Phe Pro Asp Asp Asp Ser Pro Ala Thr Ile Ile Glu	
65 70 75 80	
Arg Val Gln Pro His Thr Thr Ile Ile Asp Asp Thr Pro Pro Pro Thr	
85 90 95	
Phe Arg Arg Glu Leu Leu Ile Ser Glu Gln Arg Gln Gln Arg Glu Lys	
100 105 110	
Arg Phe Asn Ile Thr Val Ser Lys Asn Ala Glu Ala Ile Met Glu Ser	
115 120 125	
Arg Ser Met Ile Thr Ser Met Pro Thr Gln Thr Pro Ser Leu Gly Val	
130 135 140	
Val Tyr Asp Lys Asp Lys Arg Ile Gln Met Leu Glu Asp Glu Val Val	
145 150 155 160	
Asn Leu Arg Asn Gln Arg Ser Asn Thr Lys Ser Ser Asp Asn Leu Asp	
165 170 175	
Asn Phe Thr Lys Ile Leu Phe Gly Lys Thr Pro Tyr Lys Ser Thr Glu	
180 185 190	
Val Asn Lys Arg Ile Ala Ile Val Asn Tyr Ala Asn Leu Asn Gly Ser	
195 200 205	
Pro Leu Ser Val Glu Asp Leu Asp Val Cys Ser Glu Asp Glu Ile Asp	
210 215 220	
Arg Ile Tyr Lys Thr Ile Lys Gln Tyr His Glu Ser Arg Lys Arg Lys	
225 230 235 240	

Ile	Ile	Val	Thr	Asn	Val	Ile	Ile	Ile	Val	Ile	Asn	Ile	Ile	Glu	Gln
				245					250					255	
Ala	Leu	Leu	Lys	Leu	Gly	Phe	Glu	Glu	Ile	Lys	Gly	Leu	Ser	Thr	Asp
			260					265					270		
Ile	Thr	Ser	Glu	Ile	Ile	Asp	Val	Glu	Ile	Gly	Asp	Asp	Cys	Asp	Ala
		275				280						285			
Val	Ala	Ser	Lys	Leu	Gly	Ile	Gly	Asn	Ser	Pro	Val	Leu	Asn	Ile	Val
	290					295					300				
Leu	Phe	Ile	Leu	Lys	Ile	Phe	Val	Lys	Arg	Ile	Lys	Ile	Ile		
305					310					315					

<210> 279

<211> 579

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(579)

<400> 279

atg	gcg	gat	aaa	aaa	aat	tta	gcc	gtt	aga	agc	agt	tac	gat	gat	tat	48
Met	Ala	Asp	Lys	Lys	Asn	Leu	Ala	Val	Arg	Ser	Ser	Tyr	Asp	Asp	Tyr	
1				5					10					15		
atc	gaa	aca	gtt	aat	aag	att	aca	cca	cag	ctt	aaa	aat	cta	cta	gcg	96
Ile	Glu	Thr	Val	Asn	Lys	Ile	Thr	Pro	Gln	Leu	Lys	Asn	Leu	Leu	Ala	
			20					25					30			
caa	atc	ggg	gga	gat	gca	gcc	gtc	aaa	gga	ggc	aac	aat	aat	ctt	aat	144
Gln	Ile	Gly	Gly	Asp	Ala	Ala	Val	Lys	Gly	Gly	Asn	Asn	Asn	Leu	Asn	
		35					40					45				
tct	caa	aca	gat	gtg	act	gcc	ggc	gca	tgt	gat	aca	aaa	tca	aag	agt	192
Ser	Gln	Thr	Asp	Val	Thr	Ala	Gly	Ala	Cys	Asp	Thr	Lys	Ser	Lys	Ser	
		50				55					60					
tca	aaa	tgt	att	aca	tgt	aaa	cca	aaa	tca	aaa	tcc	tcg	tct	tct	tct	240
Ser	Lys	Cys	Ile	Thr	Cys	Lys	Pro	Lys	Ser	Lys	Ser	Ser	Ser	Ser	Ser	
	65				70				75						80	
aca	tca	aca	tcc	aag	ggc	tcc	aaa	aat	act	tct	ggg	gct	cct	aaa	cgt	288
Thr	Ser	Thr	Ser	Lys	Gly	Ser	Lys	Asn	Thr	Ser	Gly	Ala	Pro	Lys	Arg	
				85					90					95		
aga	aca	aca	gtt	act	act	aca	tcg	tac	aat	gcg	atg	gat	ggg	cag	att	336
Arg	Thr	Thr	Val	Thr	Thr	Thr	Ser	Tyr	Asn	Ala	Met	Asp	Gly	Gln	Ile	
			100					105					110			
gtc	caa	gct	gtt	act	aat	gct	ggg	aaa	ata	gtt	tat	ggg	acc	gtc	aga	384
Val	Gln	Ala	Val	Thr	Asn	Ala	Gly	Lys	Ile	Val	Tyr	Gly	Thr	Val	Arg	
		115					120					125				
gac	ggc	caa	tta	gaa	gtt	cgt	gga	atg	gtc	gga	gag	atc	aat	cac	gat	432
Asp	Gly	Gln	Leu	Glu	Val	Arg	Gly	Met	Val	Gly	Glu	Ile	Asn	His	Asp	
	130					135					140					
ctt	cta	ggg	atc	gaa	tca	gtt	aat	gct	ggg	aaa	aag	aaa	cca	tct	aaa	480

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Leu Leu Gly Ile Glu Ser Val Asn Ala Gly Lys Lys Lys Pro Ser Lys
145                      150                      155                      160

aag atg ccc act aat aaa aag att aat atg tcg tcc ggt atg aga cga      528
Lys Met Pro Thr Asn Lys Lys Ile Asn Met Ser Ser Gly Met Arg Arg
                      165                      170                      175

cag gaa cag att aat cca gac gat tgt tgt ctg gat atg gga atg tat      576
Gln Glu Gln Ile Asn Pro Asp Asp Cys Cys Leu Asp Met Gly Met Tyr
                      180                      185                      190

taa
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<210> 280
<211> 192
<212> PRT
<213> vaccinia virus

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<400> 280
Met Ala Asp Lys Lys Asn Leu Ala Val Arg Ser Ser Tyr Asp Asp Tyr
1      5      10      15
Ile Glu Thr Val Asn Lys Ile Thr Pro Gln Leu Lys Asn Leu Leu Ala
20     25     30
Gln Ile Gly Gly Asp Ala Ala Val Lys Gly Gly Asn Asn Asn Leu Asn
35     40     45
Ser Gln Thr Asp Val Thr Ala Gly Ala Cys Asp Thr Lys Ser Lys Ser
50     55     60
Ser Lys Cys Ile Thr Cys Lys Pro Lys Ser Lys Ser Ser Ser Ser
65     70     75     80
Thr Ser Thr Ser Lys Gly Ser Lys Asn Thr Ser Gly Ala Pro Lys Arg
85     90     95
Arg Thr Thr Val Thr Thr Thr Ser Tyr Asn Ala Met Asp Gly Gln Ile
100    105    110
Val Gln Ala Val Thr Asn Ala Gly Lys Ile Val Tyr Gly Thr Val Arg
115    120    125
Asp Gly Gln Leu Glu Val Arg Gly Met Val Gly Glu Ile Asn His Asp
130    135    140
Leu Leu Gly Ile Glu Ser Val Asn Ala Gly Lys Lys Lys Pro Ser Lys
145    150    155    160
Lys Met Pro Thr Asn Lys Lys Ile Asn Met Ser Ser Gly Met Arg Arg
165    170    175
Gln Glu Gln Ile Asn Pro Asp Asp Cys Cys Leu Asp Met Gly Met Tyr
180    185    190

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<210> 281
<211> 210
<212> DNA
<213> vaccinia virus

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<220>
<221> CDS
<222> (1)...(210)

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<400> 281
atg att ggt att ctt ttg ttg atc ggt att tgc gta gca gtt acc gtc      48

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Met Ile Gly Ile Leu Leu Leu Ile Gly Ile Cys Val Ala Val Thr Val
 1 5 10 15

gcc atc cta tat gcg ctg tat aat aag atc aag aac cca caa aat ccg 96
 Ala Ile Leu Tyr Ala Leu Tyr Asn Lys Ile Lys Asn Pro Gln Asn Pro
 20 25 30

aat cca agt ccg aat tta aat tcg cct cct cca gaa cca aga aat acc 144
 Asn Pro Ser Pro Asn Leu Asn Ser Pro Pro Pro Glu Pro Arg Asn Thr
 35 40 45

aag ttt gta aat aat ctg gaa aag gat cat att agt tca ttg tat aat 192
 Lys Phe Val Asn Asn Leu Glu Lys Asp His Ile Ser Ser Leu Tyr Asn
 50 55 60

cta gtt aaa tct tct gca 210
 Leu Val Lys Ser Ser Ala
 65 70

<210> 282
 <211> 70
 <212> PRT
 <213> vaccinia virus

<400> 282
 Met Ile Gly Ile Leu Leu Leu Ile Gly Ile Cys Val Ala Val Thr Val
 1 5 10 15

Ala Ile Leu Tyr Ala Leu Tyr Asn Lys Ile Lys Asn Pro Gln Asn Pro
 20 25 30

Asn Pro Ser Pro Asn Leu Asn Ser Pro Pro Pro Glu Pro Arg Asn Thr
 35 40 45

Lys Phe Val Asn Asn Leu Glu Lys Asp His Ile Ser Ser Leu Tyr Asn
 50 55 60

Leu Val Lys Ser Ser Ala
 65 70

<210> 283
 <211> 273
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(273)

<400> 283
 atg gac atg atg ctt atg att gga aat tat ttt tcc ggc gtg cta atc 48
 Met Asp Met Met Leu Met Ile Gly Asn Tyr Phe Ser Gly Val Leu Ile
 1 5 10 15

gct gga atc att ctt ttg att ctt tcg tgt atc ttc gcc ttt att gac 96
 Ala Gly Ile Ile Leu Leu Ile Leu Ser Cys Ile Phe Ala Phe Ile Asp
 20 25 30

ttt agt aag tct acc agt ccc act cgt aca tgg aaa gta ttg agt att 144
 Phe Ser Lys Ser Thr Ser Pro Thr Arg Thr Trp Lys Val Leu Ser Ile
 35 40 45

atg gcg ttt ata ctt ggt att att atc aca gtc gga atg cta att tat	192
Met Ala Phe Ile Leu Gly Ile Ile Ile Thr Val Gly Met Leu Ile Tyr	
50 55 60	

tct atg tgg gga aag cac tgc gcg ccc cac aga gtt agc gga gtc att	240
Ser Met Trp Gly Lys His Cys Ala Pro His Arg Val Ser Gly Val Ile	
65 70 75 80	

cac acc aat cat agc gat att tcc gtg aac taa	273
His Thr Asn His Ser Asp Ile Ser Val Asn *	
85 90	

<210> 284
 <211> 90
 <212> PRT
 <213> vaccinia virus

<400> 284	
Met Asp Met Met Leu Met Ile Gly Asn Tyr Phe Ser Gly Val Leu Ile	
1 5 10 15	
Ala Gly Ile Ile Leu Leu Ile Leu Ser Cys Ile Phe Ala Phe Ile Asp	
20 25 30	
Phe Ser Lys Ser Thr Ser Pro Thr Arg Thr Trp Lys Val Leu Ser Ile	
35 40 45	
Met Ala Phe Ile Leu Gly Ile Ile Ile Thr Val Gly Met Leu Ile Tyr	
50 55 60	
Ser Met Trp Gly Lys His Cys Ala Pro His Arg Val Ser Gly Val Ile	
65 70 75 80	
His Thr Asn His Ser Asp Ile Ser Val Asn	
85 90	

<210> 285
 <211> 162
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(162)

<400> 285	
atg ata agt aat tac gag ccg ttg ctg ctg tta gtt ata aca tgc tgt	48
Met Ile Ser Asn Tyr Glu Pro Leu Leu Leu Leu Val Ile Thr Cys Cys	
1 5 10 15	
gta cta cta ttt aat ttt acc ata tct tcg aaa aca aaa ata gat att	96
Val Leu Leu Phe Asn Phe Thr Ile Ser Ser Lys Thr Lys Ile Asp Ile	
20 25 30	
att ttt gca gta caa act att gtt ttt ata tgg ttt ata ttc cac ttt	144
Ile Phe Ala Val Gln Thr Ile Val Phe Ile Trp Phe Ile Phe His Phe	
35 40 45	
gtt cat tcg gcg att taa	162
Val His Ser Ala Ile *	
50	

<210> 286
 <211> 53
 <212> PRT
 <213> vaccinia virus

<400> 286
 Met Ile Ser Asn Tyr Glu Pro Leu Leu Leu Leu Val Ile Thr Cys Cys
 1 5 10 15
 Val Leu Leu Phe Asn Phe Thr Ile Ser Ser Lys Thr Lys Ile Asp Ile
 20 25 30
 Ile Phe Ala Val Gln Thr Ile Val Phe Ile Trp Phe Ile Phe His Phe
 35 40 45
 Val His Ser Ala Ile
 50

<210> 287
 <211> 285
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(285)

<400> 287
 atg ttc gta gac gat aat tcg ttg ata att tat tct aca tgg ccc agt 48
 Met Phe Val Asp Asp Asn Ser Leu Ile Ile Tyr Ser Thr Trp Pro Ser
 1 5 10 15
 aca ttg tcc gat tca tca ggt aga gtc atc gtt atg cca gat aat aga 96
 Thr Leu Ser Asp Ser Ser Gly Arg Val Ile Val Met Pro Asp Asn Arg
 20 25 30
 tca ttc acg ttt aag gaa ggg ttt aaa tta gat gaa tcg ata aaa tct 144
 Ser Phe Thr Phe Lys Glu Gly Phe Lys Leu Asp Glu Ser Ile Lys Ser
 35 40 45
 ata ttg ttg gta aac ccg tcg tct ata gat cta tta aag att aga gta 192
 Ile Leu Leu Val Asn Pro Ser Ser Ile Asp Leu Leu Lys Ile Arg Val
 50 55 60
 tat aaa cat cgc ata aaa tgg atg ggt gat ata ttc gta tta ttt gag 240
 Tyr Lys His Arg Ile Lys Trp Met Gly Asp Ile Phe Val Leu Phe Glu
 65 70 75 80
 caa gaa aat atc cca cca cct ttt cgt cta gta aat gat aag taa 285
 Gln Glu Asn Ile Pro Pro Pro Phe Arg Leu Val Asn Asp Lys *
 85 90

<210> 288
 <211> 94
 <212> PRT
 <213> vaccinia virus

<400> 288

Met Phe Val Asp Asp Asn Ser Leu Ile Ile Tyr Ser Thr Trp Pro Ser
1 5 10 15
Thr Leu Ser Asp Ser Ser Gly Arg Val Ile Val Met Pro Asp Asn Arg
20 25 30
Ser Phe Thr Phe Lys Glu Gly Phe Lys Leu Asp Glu Ser Ile Lys Ser
35 40 45
Ile Leu Leu Val Asn Pro Ser Ser Ile Asp Leu Leu Lys Ile Arg Val
50 55 60
Tyr Lys His Arg Ile Lys Trp Met Gly Asp Ile Phe Val Leu Phe Glu
65 70 75 80
Gln Glu Asn Ile Pro Pro Pro Phe Arg Leu Val Asn Asp Lys
85 90

<210> 289

<211> 1134

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(1134)

<400> 289

atg ggg gca gcc gtt act ctt aat aga att aaa ata gca cca gga ata 48
Met Gly Ala Ala Val Thr Leu Asn Arg Ile Lys Ile Ala Pro Gly Ile
1 5 10 15
gca gat ata cga gac aaa tat atg gaa tta ggt ttt aat tat cct gaa 96
Ala Asp Ile Arg Asp Lys Tyr Met Glu Leu Gly Phe Asn Tyr Pro Glu
20 25 30
tat aat aga gct gtt aag ttt gcc gaa gaa agt tat atg tat tat tat 144
Tyr Asn Arg Ala Val Lys Phe Ala Glu Glu Ser Tyr Met Tyr Tyr Tyr
35 40 45
gaa acg tct cca gga gaa att aaa ccc aaa ttt tgt ttg ata gat ggt 192
Glu Thr Ser Pro Gly Glu Ile Lys Pro Lys Phe Cys Leu Ile Asp Gly
50 55 60
atg tcg ata gat cat tgt agt agt ttt ata gtt cct gaa ttt gct aaa 240
Met Ser Ile Asp His Cys Ser Ser Phe Ile Val Pro Glu Phe Ala Lys
65 70 75 80
caa tat gta tta att cat gga gaa cca tgt agt tct ttc aaa ttt cgt 288
Gln Tyr Val Leu Ile His Gly Glu Pro Cys Ser Ser Phe Lys Phe Arg
85 90 95
cct gga tca tta atc tat tat cag aac gag gta act cct gaa tat att 336
Pro Gly Ser Leu Ile Tyr Tyr Gln Asn Glu Val Thr Pro Glu Tyr Ile
100 105 110
aag gat tta aaa cac gct act gat tat ata gca tcc ggg caa cga tgt 384
Lys Asp Leu Lys His Ala Thr Asp Tyr Ile Ala Ser Gly Gln Arg Cys
115 120 125
cat ttt ata aaa aag gat tat ctc ctg ggc gat agt gat agc gtg gca 432
His Phe Ile Lys Lys Asp Tyr Leu Leu Gly Asp Ser Asp Ser Val Ala

130	135	140	
aaa tgt tgt tct aag aca aat acc aaa cac tgt cca aaa ata ttt aat			480
Lys Cys Cys Ser Lys Thr Asn Thr Lys His Cys Pro Lys Ile Phe Asn			
145	150	155	160
aat aat tac aag aca gaa cat tgt gat gat ttc atg act gga ttt tgt			528
Asn Asn Tyr Lys Thr Glu His Cys Asp Asp Phe Met Thr Gly Phe Cys			
	165	170	175
aga aac gat cct gga aac ccc aat tgt tta gaa tgg tta cgt gca aaa			576
Arg Asn Asp Pro Gly Asn Pro Asn Cys Leu Glu Trp Leu Arg Ala Lys			
	180	185	190
cgg aaa ccg gct atg tct act tat tcc gat att tgc tcc aaa cat atg			624
Arg Lys Pro Ala Met Ser Thr Tyr Ser Asp Ile Cys Ser Lys His Met			
	195	200	205
gat gcg aga tat tgt tct gag ttt att aga att att cgt cct gat tat			672
Asp Ala Arg Tyr Cys Ser Glu Phe Ile Arg Ile Ile Arg Pro Asp Tyr			
	210	215	220
ttt act ttt ggg gat acg gca tta tac gtc ttt tgt aac gat cat aaa			720
Phe Thr Phe Gly Asp Thr Ala Leu Tyr Val Phe Cys Asn Asp His Lys			
	225	230	235
gga aat aga aat tgt tgg tgc gcg aat tat cca aaa tct aat tcc gga			768
Gly Asn Arg Asn Cys Trp Cys Ala Asn Tyr Pro Lys Ser Asn Ser Gly			
	245	250	255
gat aaa tat tta gga cct agg gta tgt tgg tta cat gag tgc acc gac			816
Asp Lys Tyr Leu Gly Pro Arg Val Cys Trp Leu His Glu Cys Thr Asp			
	260	265	270
gaa tct aga gat aga aaa tgg tta tat tat aat caa gat gtt caa aga			864
Glu Ser Arg Asp Arg Lys Trp Leu Tyr Tyr Asn Gln Asp Val Gln Arg			
	275	280	285
act aga tgt aaa tac gtt ggg tgc acg att aac gtt aac tct tta gcg			912
Thr Arg Cys Lys Tyr Val Gly Cys Thr Ile Asn Val Asn Ser Leu Ala			
	290	295	300
tta aaa aat tcc caa gcg gaa ctt acg tct aat tgt act aga act acg			960
Leu Lys Asn Ser Gln Ala Glu Leu Thr Ser Asn Cys Thr Arg Thr Thr			
	305	310	315
tct gca gtt ggt aac gta cat cat cca gga gaa cct gta gta aaa gat			1008
Ser Ala Val Gly Asn Val His His Pro Gly Glu Pro Val Val Lys Asp			
	325	330	335
aaa ata aaa ctg cct acc tgg ttg ggc gcg gcc ata aca ctg gtt gta			1056
Lys Ile Lys Leu Pro Thr Trp Leu Gly Ala Ala Ile Thr Leu Val Val			
	340	345	350
ata tct gtt att ttc tat ttt ata tcc att tat tcg cgt cct aaa att			1104
Ile Ser Val Ile Phe Tyr Phe Ile Ser Ile Tyr Ser Arg Pro Lys Ile			
	355	360	365
aaa aca aat gat ata aat gtt cgt aga cga			1134

Lys Thr Asn Asp Ile Asn Val Arg Arg Arg
 370 375

<210> 290
 <211> 378
 <212> PRT
 <213> vaccinia virus

<400> 290
 Met Gly Ala Ala Val Thr Leu Asn Arg Ile Lys Ile Ala Pro Gly Ile
 1 5 10 15
 Ala Asp Ile Arg Asp Lys Tyr Met Glu Leu Gly Phe Asn Tyr Pro Glu
 20 25 30
 Tyr Asn Arg Ala Val Lys Phe Ala Glu Glu Ser Tyr Met Tyr Tyr Tyr
 35 40 45
 Glu Thr Ser Pro Gly Glu Ile Lys Pro Lys Phe Cys Leu Ile Asp Gly
 50 55 60
 Met Ser Ile Asp His Cys Ser Ser Phe Ile Val Pro Glu Phe Ala Lys
 65 70 75 80
 Gln Tyr Val Leu Ile His Gly Glu Pro Cys Ser Ser Phe Lys Phe Arg
 85 90 95
 Pro Gly Ser Leu Ile Tyr Tyr Gln Asn Glu Val Thr Pro Glu Tyr Ile
 100 105 110
 Lys Asp Leu Lys His Ala Thr Asp Tyr Ile Ala Ser Gly Gln Arg Cys
 115 120 125
 His Phe Ile Lys Lys Asp Tyr Leu Leu Gly Asp Ser Asp Ser Val Ala
 130 135 140
 Lys Cys Cys Ser Lys Thr Asn Thr Lys His Cys Pro Lys Ile Phe Asn
 145 150 155 160
 Asn Asn Tyr Lys Thr Glu His Cys Asp Asp Phe Met Thr Gly Phe Cys
 165 170 175
 Arg Asn Asp Pro Gly Asn Pro Asn Cys Leu Glu Trp Leu Arg Ala Lys
 180 185 190
 Arg Lys Pro Ala Met Ser Thr Tyr Ser Asp Ile Cys Ser Lys His Met
 195 200 205
 Asp Ala Arg Tyr Cys Ser Glu Phe Ile Arg Ile Ile Arg Pro Asp Tyr
 210 215 220
 Phe Thr Phe Gly Asp Thr Ala Leu Tyr Val Phe Cys Asn Asp His Lys
 225 230 235 240
 Gly Asn Arg Asn Cys Trp Cys Ala Asn Tyr Pro Lys Ser Asn Ser Gly
 245 250 255
 Asp Lys Tyr Leu Gly Pro Arg Val Cys Trp Leu His Glu Cys Thr Asp
 260 265 270
 Glu Ser Arg Asp Arg Lys Trp Leu Tyr Tyr Asn Gln Asp Val Gln Arg
 275 280 285
 Thr Arg Cys Lys Tyr Val Gly Cys Thr Ile Asn Val Asn Ser Leu Ala
 290 295 300
 Leu Lys Asn Ser Gln Ala Glu Leu Thr Ser Asn Cys Thr Arg Thr Thr
 305 310 315 320
 Ser Ala Val Gly Asn Val His His Pro Gly Glu Pro Val Val Lys Asp
 325 330 335
 Lys Ile Lys Leu Pro Thr Trp Leu Gly Ala Ala Ile Thr Leu Val Val
 340 345 350
 Ile Ser Val Ile Phe Tyr Phe Ile Ser Ile Tyr Ser Arg Pro Lys Ile
 355 360 365
 Lys Thr Asn Asp Ile Asn Val Arg Arg Arg
 370 375

<210> 291
 <211> 612
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(612)

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<400> 291
atg agt tat tta aga tat tac aat atg ctt gac gac ttc tct gcg ggt   48
Met Ser Tyr Leu Arg Tyr Tyr Asn Met Leu Asp Asp Phe Ser Ala Gly
  1              5              10              15

gct gga gtg ctt gat aaa gat tta ttt aca gag gaa cag cag caa tcg   96
Ala Gly Val Leu Asp Lys Asp Leu Phe Thr Glu Glu Gln Gln Gln Ser
      20              25              30

ttt atg cct aaa gat gga ggt atg atg caa aac gat tat gga gga atg  144
Phe Met Pro Lys Asp Gly Gly Met Met Gln Asn Asp Tyr Gly Gly Met
      35              40              45

aat gat tat ttg gga atc ttc aaa aat aat gat gtt aga acg tta ctc  192
Asn Asp Tyr Leu Gly Ile Phe Lys Asn Asn Asp Val Arg Thr Leu Leu
      50              55              60

ggt ttg att ttg ttc gtc ttg gct cta tat agc cct cct cta atc tct  240
Gly Leu Ile Leu Phe Val Leu Ala Leu Tyr Ser Pro Pro Leu Ile Ser
      65              70              75              80

ata ttg atg ata ttt atc tca tct ttt cta ttg cct ctt act agc tta  288
Ile Leu Met Ile Phe Ile Ser Ser Phe Leu Leu Pro Leu Thr Ser Leu
      85              90              95

gtt att acc tat tgc tta gta act caa atg tat cgt gga ggt aat ggc  336
Val Ile Thr Tyr Cys Leu Val Thr Gln Met Tyr Arg Gly Gly Asn Gly
      100             105             110

aac act gtg gga atg tct att gta tgt att gta gct gct gta att att  384
Asn Thr Val Gly Met Ser Ile Val Cys Ile Val Ala Ala Val Ile Ile
      115             120             125

atg gca atc aat gta ttt acg aat tca cag ata ttt aat att att tct  432
Met Ala Ile Asn Val Phe Thr Asn Ser Gln Ile Phe Asn Ile Ile Ser
      130             135             140

tac att att ttg ttt att ctg ttc ttt gca tat gtg atg aac atc gaa  480
Tyr Ile Ile Leu Phe Ile Leu Phe Phe Ala Tyr Val Met Asn Ile Glu
      145             150             155             160

aga cag gac tat aga aga agt ata aat gta acc att cct gaa cag tat  528
Arg Gln Asp Tyr Arg Arg Ser Ile Asn Val Thr Ile Pro Glu Gln Tyr
      165             170             175

acc tgc aac aaa cct tat act gcg gga aat aag gta aat gtt gat ata  576
Thr Cys Asn Lys Pro Tyr Thr Ala Gly Asn Lys Val Asn Val Asp Ile
      180             185             190

cca aca ttt aac agt tta aat act gac gat tat taa   612

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Pro Thr Phe Asn Ser Leu Asn Thr Asp Asp Tyr *

195

200

<210> 292

<211> 203

<212> PRT

<213> vaccinia virus

<400> 292

Met	Ser	Tyr	Leu	Arg	Tyr	Tyr	Asn	Met	Leu	Asp	Asp	Phe	Ser	Ala	Gly		
1				5					10					15			
Ala	Gly	Val	Leu	Asp	Lys	Asp	Leu	Phe	Thr	Glu	Glu	Gln	Gln	Gln	Ser		
			20					25					30				
Phe	Met	Pro	Lys	Asp	Gly	Gly	Met	Met	Gln	Asn	Asp	Tyr	Gly	Gly	Met		
		35					40					45					
Asn	Asp	Tyr	Leu	Gly	Ile	Phe	Lys	Asn	Asn	Asp	Val	Arg	Thr	Leu	Leu		
	50					55					60						
Gly	Leu	Ile	Leu	Phe	Val	Leu	Ala	Leu	Tyr	Ser	Pro	Pro	Leu	Ile	Ser		
65				70					75					80			
Ile	Leu	Met	Ile	Phe	Ile	Ser	Ser	Phe	Leu	Leu	Pro	Leu	Thr	Ser	Leu		
			85					90					95				
Val	Ile	Thr	Tyr	Cys	Leu	Val	Thr	Gln	Met	Tyr	Arg	Gly	Gly	Asn	Gly		
			100					105					110				
Asn	Thr	Val	Gly	Met	Ser	Ile	Val	Cys	Ile	Val	Ala	Ala	Val	Ile	Ile		
		115					120					125					
Met	Ala	Ile	Asn	Val	Phe	Thr	Asn	Ser	Gln	Ile	Phe	Asn	Ile	Ile	Ser		
	130					135					140						
Tyr	Ile	Ile	Leu	Phe	Ile	Leu	Phe	Phe	Ala	Tyr	Val	Met	Asn	Ile	Glu		
145				150					155					160			
Arg	Gln	Asp	Tyr	Arg	Arg	Ser	Ile	Asn	Val	Thr	Ile	Pro	Glu	Gln	Tyr		
			165					170					175				
Thr	Cys	Asn	Lys	Pro	Tyr	Thr	Ala	Gly	Asn	Lys	Val	Asn	Val	Asp	Ile		
		180						185					190				
Pro	Thr	Phe	Asn	Ser	Leu	Asn	Thr	Asp	Asp	Tyr							
		195					200										

<210> 293

<211> 1482

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(1482)

<400> 293

atg	tca	cta	tta	aag	atg	gag	tat	aat	ctt	tat	gcc	gaa	cta	aaa	aaa		48
Met	Ser	Leu	Leu	Lys	Met	Glu	Tyr	Asn	Leu	Tyr	Ala	Glu	Leu	Lys	Lys		
1				5					10					15			
atg	act	tgt	ggt	caa	ccc	cta	agt	ctt	ttt	aac	gaa	gac	ggg	gat	ttt		96
Met	Thr	Cys	Gly	Gln	Pro	Leu	Ser	Leu	Phe	Asn	Glu	Asp	Gly	Asp	Phe		
			20					25					30				
gta	gaa	gtt	gaa	ccg	gga	tca	tcc	ttt	aag	ttt	ctg	ata	cct	aag	gga		144
Val	Glu	Val	Glu	Pro	Gly	Ser	Ser	Phe	Lys	Phe	Leu	Ile	Pro	Lys	Gly		
		35					40					45					

ttt tac gcc tct cct tcc gta aag acg agt cta gta ttt gaa aca tta	192
Phe Tyr Ala Ser Pro Ser Val Lys Thr Ser Leu Val Phe Glu Thr Leu	
50 55 60	
aca acg acc gat aat aaa atc act agt atc aat cca aca aat gcg cca	240
Thr Thr Thr Asp Asn Lys Ile Thr Ser Ile Asn Pro Thr Asn Ala Pro	
65 70 75 80	
aag tta tat cct ctt caa cgc aaa gtc gta tct gaa gta gtt tct aat	288
Lys Leu Tyr Pro Leu Gln Arg Lys Val Val Ser Glu Val Val Ser Asn	
85 90 95	
atg agg aaa atg atc gaa tca aaa cgt cct cta tac att act ctt cac	336
Met Arg Lys Met Ile Glu Ser Lys Arg Pro Leu Tyr Ile Thr Leu His	
100 105 110	
ttg gcg tgt gga ttt ggt aag act att acc acg tgt tat ctt atg gct	384
Leu Ala Cys Gly Phe Gly Lys Thr Ile Thr Thr Cys Tyr Leu Met Ala	
115 120 125	
aca cac ggt aga aaa acc gtc att tgc gta ccc aat aaa atg tta ata	432
Thr His Gly Arg Lys Thr Val Ile Cys Val Pro Asn Lys Met Leu Ile	
130 135 140	
cat caa tgg aag aca cag gta gag gca gtc gga ttg gaa cat aag ata	480
His Gln Trp Lys Thr Gln Val Glu Ala Val Gly Leu Glu His Lys Ile	
145 150 155 160	
tcc ata gat gga gta agt agt cta tta aag gaa cta aag act caa agt	528
Ser Ile Asp Gly Val Ser Ser Leu Leu Lys Glu Leu Lys Thr Gln Ser	
165 170 175	
ccg gat gta tta ata gta gtc agt aga cat ctg aca aac gat gcc ttt	576
Pro Asp Val Leu Ile Val Val Ser Arg His Leu Thr Asn Asp Ala Phe	
180 185 190	
tgt aaa tat atc aat aag cat tat gat ttg ttc atc ttg gat gaa tca	624
Cys Lys Tyr Ile Asn Lys His Tyr Asp Leu Phe Ile Leu Asp Glu Ser	
195 200 205	
cat acg tat aat ctg atg aac aat aca gca gtt aca aga ttt tta gcg	672
His Thr Tyr Asn Leu Met Asn Asn Thr Ala Val Thr Arg Phe Leu Ala	
210 215 220	
tat tat cct ccg atg atg tgt tat ttt tta act gct aca cct aga cca	720
Tyr Tyr Pro Pro Met Met Cys Tyr Phe Leu Thr Ala Thr Pro Arg Pro	
225 230 235 240	
tct aac aga att tat tgt aac agt att att aat att gcc aag tta tcc	768
Ser Asn Arg Ile Tyr Cys Asn Ser Ile Ile Asn Ile Ala Lys Leu Ser	
245 250 255	
gat cta aaa aaa act atc tat gcg gta gat agt ttt ttt gag cca tat	816
Asp Leu Lys Lys Thr Ile Tyr Ala Val Asp Ser Phe Phe Glu Pro Tyr	
260 265 270	
tcc aca gac aat att aga cat atg gta aaa cga cta gat gga cca tct	864
Ser Thr Asp Asn Ile Arg His Met Val Lys Arg Leu Asp Gly Pro Ser	

275	280	285	
aat aaa tat cat ata tat acc gag aag tta tta tct gta gac gag cct			912
Asn Lys Tyr His Ile Tyr Thr Glu Lys Leu Leu Ser Val Asp Glu Pro			
290	295	300	
aga aat caa ctt att ctt aat acc ctg gta gaa gaa ttc aag tca gga			960
Arg Asn Gln Leu Ile Leu Asn Thr Leu Val Glu Glu Phe Lys Ser Gly			
305	310	315	320
act att aat cgc att tta gtt att act aaa cta cgt gaa cat atg gta			1008
Thr Ile Asn Arg Ile Leu Val Ile Thr Lys Leu Arg Glu His Met Val			
	325	330	335
tta ttc tac aaa cga tta tta gat ctt ttc gga cca gag gtt gta ttt			1056
Leu Phe Tyr Lys Arg Leu Leu Asp Leu Phe Gly Pro Glu Val Val Phe			
	340	345	350
ata gga gac gcc caa aat aga cgt act cca gat atg gtc aaa tca atc			1104
Ile Gly Asp Ala Gln Asn Arg Arg Thr Pro Asp Met Val Lys Ser Ile			
	355	360	365
aag gaa cta aat aga ttt ata ttc gta tcc acc tta ttt tat tcc ggt			1152
Lys Glu Leu Asn Arg Phe Ile Phe Val Ser Thr Leu Phe Tyr Ser Gly			
	370	375	380
act ggt tta gat att cct agt ttg gat tct ttg ttc att tgc tcg gca			1200
Thr Gly Leu Asp Ile Pro Ser Leu Asp Ser Leu Phe Ile Cys Ser Ala			
	385	390	400
gta atc aac aat atg caa ata gag caa tta cta ggg agg ata tgt cga			1248
Val Ile Asn Asn Met Gln Ile Glu Gln Leu Leu Gly Arg Ile Cys Arg			
	405	410	415
gaa aca gaa cta tta gat agg acg gta tat gta ttt cct agc aca tcc			1296
Glu Thr Glu Leu Leu Asp Arg Thr Val Tyr Val Phe Pro Ser Thr Ser			
	420	425	430
atc aaa gaa ata aag tac atg ata gga aat ttc gtt caa cga att att			1344
Ile Lys Glu Ile Lys Tyr Met Ile Gly Asn Phe Val Gln Arg Ile Ile			
	435	440	445
agt ctg tct gta gat aaa cta gga ttt aaa caa aaa agt tat cgg aaa			1392
Ser Leu Ser Val Asp Lys Leu Gly Phe Lys Gln Lys Ser Tyr Arg Lys			
	450	455	460
cat caa gaa tcc gat ccc act tct gca tgt aca aca tca tcc aga gaa			1440
His Gln Glu Ser Asp Pro Thr Ser Ala Cys Thr Thr Ser Ser Arg Glu			
	465	470	475
gaa cgt gta tta aat aga ata ttt aac tcg caa aat cgt taa			1482
Glu Arg Val Leu Asn Arg Ile Phe Asn Ser Gln Asn Arg *			
	485	490	

<210> 294
 <211> 493
 <212> PRT

<213> vaccinia virus

<400> 294

Met	Ser	Leu	Leu	Lys	Met	Glu	Tyr	Asn	Leu	Tyr	Ala	Glu	Leu	Lys	Lys		
1				5					10					15			
Met	Thr	Cys	Gly	Gln	Pro	Leu	Ser	Leu	Phe	Asn	Glu	Asp	Gly	Asp	Phe		
		20						25					30				
Val	Glu	Val	Glu	Pro	Gly	Ser	Ser	Phe	Lys	Phe	Leu	Ile	Pro	Lys	Gly		
		35					40					45					
Phe	Tyr	Ala	Ser	Pro	Ser	Val	Lys	Thr	Ser	Leu	Val	Phe	Glu	Thr	Leu		
	50				55						60						
Thr	Thr	Thr	Asp	Asn	Lys	Ile	Thr	Ser	Ile	Asn	Pro	Thr	Asn	Ala	Pro		
65				70					75					80			
Lys	Leu	Tyr	Pro	Leu	Gln	Arg	Lys	Val	Val	Ser	Glu	Val	Val	Ser	Asn		
			85					90						95			
Met	Arg	Lys	Met	Ile	Glu	Ser	Lys	Arg	Pro	Leu	Tyr	Ile	Thr	Leu	His		
		100						105					110				
Leu	Ala	Cys	Gly	Phe	Gly	Lys	Thr	Ile	Thr	Thr	Cys	Tyr	Leu	Met	Ala		
	115					120						125					
Thr	His	Gly	Arg	Lys	Thr	Val	Ile	Cys	Val	Pro	Asn	Lys	Met	Leu	Ile		
	130				135					140							
His	Gln	Trp	Lys	Thr	Gln	Val	Glu	Ala	Val	Gly	Leu	Glu	His	Lys	Ile		
145				150						155				160			
Ser	Ile	Asp	Gly	Val	Ser	Ser	Leu	Leu	Lys	Glu	Leu	Lys	Thr	Gln	Ser		
			165					170						175			
Pro	Asp	Val	Leu	Ile	Val	Val	Ser	Arg	His	Leu	Thr	Asn	Asp	Ala	Phe		
		180					185						190				
Cys	Lys	Tyr	Ile	Asn	Lys	His	Tyr	Asp	Leu	Phe	Ile	Leu	Asp	Glu	Ser		
	195						200					205					
His	Thr	Tyr	Asn	Leu	Met	Asn	Asn	Thr	Ala	Val	Thr	Arg	Phe	Leu	Ala		
	210				215						220						
Tyr	Tyr	Pro	Pro	Met	Met	Cys	Tyr	Phe	Leu	Thr	Ala	Thr	Pro	Arg	Pro		
225				230					235						240		
Ser	Asn	Arg	Ile	Tyr	Cys	Asn	Ser	Ile	Ile	Asn	Ile	Ala	Lys	Leu	Ser		
			245					250						255			
Asp	Leu	Lys	Lys	Thr	Ile	Tyr	Ala	Val	Asp	Ser	Phe	Phe	Glu	Pro	Tyr		
		260					265						270				
Ser	Thr	Asp	Asn	Ile	Arg	His	Met	Val	Lys	Arg	Leu	Asp	Gly	Pro	Ser		
	275					280						285					
Asn	Lys	Tyr	His	Ile	Tyr	Thr	Glu	Lys	Leu	Leu	Ser	Val	Asp	Glu	Pro		
	290				295						300						
Arg	Asn	Gln	Leu	Ile	Leu	Asn	Thr	Leu	Val	Glu	Glu	Phe	Lys	Ser	Gly		
305				310						315					320		
Thr	Ile	Asn	Arg	Ile	Leu	Val	Ile	Thr	Lys	Leu	Arg	Glu	His	Met	Val		
		325						330						335			
Leu	Phe	Tyr	Lys	Arg	Leu	Leu	Asp	Leu	Phe	Gly	Pro	Glu	Val	Val	Phe		
		340					345						350				
Ile	Gly	Asp	Ala	Gln	Asn	Arg	Arg	Thr	Pro	Asp	Met	Val	Lys	Ser	Ile		
	355					360						365					
Lys	Glu	Leu	Asn	Arg	Phe	Ile	Phe	Val	Ser	Thr	Leu	Phe	Tyr	Ser	Gly		
	370					375					380						
Thr	Gly	Leu	Asp	Ile	Pro	Ser	Leu	Asp	Ser	Leu	Phe	Ile	Cys	Ser	Ala		
385				390					395						400		
Val	Ile	Asn	Asn	Met	Gln	Ile	Glu	Gln	Leu	Leu	Gly	Arg	Ile	Cys	Arg		
		405						410						415			
Glu	Thr	Glu	Leu	Leu	Asp	Arg	Thr	Val	Tyr	Val	Phe	Pro	Ser	Thr	Ser		
		420					425						430				
Ile	Lys	Glu	Ile	Lys	Tyr	Met	Ile	Gly	Asn	Phe	Val	Gln	Arg	Ile	Ile		
	435					440						445					

Ser Leu Ser Val Asp Lys Leu Gly Phe Lys Gln Lys Ser Tyr Arg Lys
 450 455 460
 His Gln Glu Ser Asp Pro Thr Ser Ala Cys Thr Thr Ser Ser Arg Glu
 465 470 475 480
 Glu Arg Val Leu Asn Arg Ile Phe Asn Ser Gln Asn Arg
 485 490

<210> 295
 <211> 231
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(231)

<400> 295
 atg gat agc acc aat gtg cgt tcc gga atg aag agt cgc aaa aag aag 48
 Met Asp Ser Thr Asn Val Arg Ser Gly Met Lys Ser Arg Lys Lys Lys
 1 5 10 15
 ccc aag act aca gtt atc gat gac gat gat tgc atg acg tgt tct 96
 Pro Lys Thr Val Ile Asp Asp Asp Cys Met Thr Cys Ser
 20 25 30
 gcc tgt cag tct aaa ttg gtt aag att tcc gac atc aca aaa gta tca 144
 Ala Cys Gln Ser Lys Leu Val Lys Ile Ser Asp Ile Thr Lys Val Ser
 35 40 45
 ttg gat tat att aat act atg agg ggt aat aca ctg gcc tgc gca gca 192
 Leu Asp Tyr Ile Asn Thr Met Arg Gly Asn Thr Leu Ala Cys Ala Ala
 50 55 60
 tgc gga tcg tcg ctt aaa ctt ctt aac gat ttt gcg agt 231
 Cys Gly Ser Ser Leu Lys Leu Leu Asn Asp Phe Ala Ser
 65 70 75

<210> 296
 <211> 77
 <212> PRT
 <213> vaccinia virus

<400> 296
 Met Asp Ser Thr Asn Val Arg Ser Gly Met Lys Ser Arg Lys Lys Lys
 1 5 10 15
 Pro Lys Thr Thr Val Ile Asp Asp Asp Cys Met Thr Cys Ser
 20 25 30
 Ala Cys Gln Ser Lys Leu Val Lys Ile Ser Asp Ile Thr Lys Val Ser
 35 40 45
 Leu Asp Tyr Ile Asn Thr Met Arg Gly Asn Thr Leu Ala Cys Ala Ala
 50 55 60
 Cys Gly Ser Ser Leu Lys Leu Leu Asn Asp Phe Ala Ser
 65 70 75

<210> 297
 <211> 351

<212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(351)

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<400> 297
atg ata act tta ttt tta atc cta tgt tat ttc att ctt att ttt aat 48
Met Ile Thr Leu Phe Leu Ile Leu Cys Tyr Phe Ile Leu Ile Phe Asn
  1           5           10          15

att ata gta cct gca ata tct gaa aaa atg aga cgc gaa cga gcc gca 96
Ile Ile Val Pro Ala Ile Ser Glu Lys Met Arg Arg Glu Arg Ala Ala
          20          25          30

tac gta aac tac aaa cgt cta aac aag aat ttc att tgt gtc gat gat 144
Tyr Val Asn Tyr Lys Arg Leu Asn Lys Asn Phe Ile Cys Val Asp Asp
          35          40          45

aga ctg ttt agt tat aat ttt aca aca tct gga att aag gca aag gtg 192
Arg Leu Phe Ser Tyr Asn Phe Thr Thr Ser Gly Ile Lys Ala Lys Val
          50          55          60

gcc gtt gat aac aaa aat gtt tcc att cca tgt tcc aag ata aac gag 240
Ala Val Asp Asn Lys Asn Val Ser Ile Pro Cys Ser Lys Ile Asn Glu
          65          70          75          80

gtc aat aat aat aaa aat gtc gat aca cta tat tgt gat aaa gat aga 288
Val Asn Asn Asn Lys Asn Val Asp Thr Leu Tyr Cys Asp Lys Asp Arg
          85          90          95

gac gat ata cca ggt ttt gca cga tcg tgc tat agg gca tat tct gac 336
Asp Asp Ile Pro Gly Phe Ala Arg Ser Cys Tyr Arg Ala Tyr Ser Asp
          100          105          110

tta ttt ttt act acc 351
Leu Phe Phe Thr Thr
          115

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<210> 298
 <211> 117
 <212> PRT
 <213> vaccinia virus

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<400> 298
Met Ile Thr Leu Phe Leu Ile Leu Cys Tyr Phe Ile Leu Ile Phe Asn
  1           5           10          15
Ile Ile Val Pro Ala Ile Ser Glu Lys Met Arg Arg Glu Arg Ala Ala
          20          25          30
Tyr Val Asn Tyr Lys Arg Leu Asn Lys Asn Phe Ile Cys Val Asp Asp
          35          40          45
Arg Leu Phe Ser Tyr Asn Phe Thr Thr Ser Gly Ile Lys Ala Lys Val
          50          55          60
Ala Val Asp Asn Lys Asn Val Ser Ile Pro Cys Ser Lys Ile Asn Glu
          65          70          75          80
Val Asn Asn Asn Lys Asn Val Asp Thr Leu Tyr Cys Asp Lys Asp Arg
          85          90          95

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Asp Asp Ile Pro Gly Phe Ala Arg Ser Cys Tyr Arg Ala Tyr Ser Asp
 100 105 110
 Leu Phe Phe Thr Thr
 115

<210> 299
 <211> 1281
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1281)

<400> 299
 atg act tct agc gct gat tta act aac tta aaa gaa tta ctt agt ctg 48
 Met Thr Ser Ser Ala Asp Leu Thr Asn Leu Lys Glu Leu Leu Ser Leu
 1 5 10 15
 tac aaa agt ttg aga ttt tca gat tct gcg gct ata gaa aag tat aat 96
 Tyr Lys Ser Leu Arg Phe Ser Asp Ser Ala Ala Ile Glu Lys Tyr Asn
 20 25 30
 tct ttg gta gaa tgg gga aca tct act tac tgg aaa ata ggc gtg caa 144
 Ser Leu Val Glu Trp Gly Thr Ser Thr Tyr Trp Lys Ile Gly Val Gln
 35 40 45
 aag gta gct aat gtc gag acg tca ata tct gat tat tat gat gag gta 192
 Lys Val Ala Asn Val Glu Thr Ser Ile Ser Asp Tyr Tyr Asp Glu Val
 50 55 60
 aaa aat aaa ccg ttt aat att gat ccg ggc tat tac att ttc tta ccg 240
 Lys Asn Lys Pro Phe Asn Ile Asp Pro Gly Tyr Tyr Ile Phe Leu Pro
 65 70 75 80
 gta tat ttt ggg agc gtc ttt att tat tcg aag ggt aaa aat atg gta 288
 Val Tyr Phe Gly Ser Val Phe Ile Tyr Ser Lys Gly Lys Asn Met Val
 85 90 95
 gaa ctt gga tct gga aac tct ttt caa ata cca gat aat atg cga agt 336
 Glu Leu Gly Ser Gly Asn Ser Phe Gln Ile Pro Asp Asn Met Arg Ser
 100 105 110
 gcg tgt aac aaa gta tta gat agt gat aac gga ata gac ttt ctg aga 384
 Ala Cys Asn Lys Val Leu Asp Ser Asp Asn Gly Ile Asp Phe Leu Arg
 115 120 125
 ttt gtt ttg tta aac aat aga tgg ata atg gaa gat gct ata tca aaa 432
 Phe Val Leu Leu Asn Asn Arg Trp Ile Met Glu Asp Ala Ile Ser Lys
 130 135 140
 tat cag tct cca gtt aat ata ttt aaa cta gct agt gag tac gga tta 480
 Tyr Gln Ser Pro Val Asn Ile Phe Lys Leu Ala Ser Glu Tyr Gly Leu
 145 150 155 160
 aac ata ccc aaa tat tta gaa att gaa ata gag gaa gac aca tta ttt 528
 Asn Ile Pro Lys Tyr Leu Glu Ile Glu Ile Glu Glu Asp Thr Leu Phe
 165 170 175

gac gac gag tta tac tct att ata gaa cgc tct ttt gat gat aaa ttt	576
Asp Asp Glu Leu Tyr Ser Ile Ile Glu Arg Ser Phe Asp Asp Lys Phe	
180 185 190	
cca aaa ata tcc ata tcg tat att aag ttg gga gaa ctt agg cgg caa	624
Pro Lys Ile Ser Ile Ser Tyr Ile Lys Leu Gly Glu Leu Arg Arg Gln	
195 200 205	
gtt gta gac ttt ttc aaa ttc tca ttc atg tat att gag tcc atc aag	672
Val Val Asp Phe Phe Lys Phe Ser Phe Met Tyr Ile Glu Ser Ile Lys	
210 215 220	
gta gat cgt ata gga gat aat att ttt att cct agc gtt ata aca aaa	720
Val Asp Arg Ile Gly Asp Asn Ile Phe Ile Pro Ser Val Ile Thr Lys	
225 230 235 240	
tca gga aaa aag ata tta gta aaa gat gta gac cat tta ata cga tcc	768
Ser Gly Lys Lys Ile Leu Val Lys Asp Val Asp His Leu Ile Arg Ser	
245 250 255	
aag gtt aga gaa cat aca ttt gta aaa gta aaa aag aaa aac aca ttt	816
Lys Val Arg Glu His Thr Phe Val Lys Val Lys Lys Lys Asn Thr Phe	
260 265 270	
tcc att tta tac gac tat gat gga aac gga aca gaa act aga gga gaa	864
Ser Ile Leu Tyr Asp Tyr Asp Gly Asn Gly Thr Glu Thr Arg Gly Glu	
275 280 285	
gta ata aaa cga att ata gac act ata gga cga gac tat tat gtt aac	912
Val Ile Lys Arg Ile Ile Asp Thr Ile Gly Arg Asp Tyr Tyr Val Asn	
290 295 300	
gga aag tat ttc tct aag gtt ggt agt gca ggc tta aag caa ttg act	960
Gly Lys Tyr Phe Ser Lys Val Gly Ser Ala Gly Leu Lys Gln Leu Thr	
305 310 315 320	
aat aaa tta gat att aat gag tgc gca act gtc gat gag tta gtt gat	1008
Asn Lys Leu Asp Ile Asn Glu Cys Ala Thr Val Asp Glu Leu Val Asp	
325 330 335	
gag att aat aaa tcc gga act gta aaa cga aaa ata aaa aac caa tca	1056
Glu Ile Asn Lys Ser Gly Thr Val Lys Arg Lys Ile Lys Asn Gln Ser	
340 345 350	
gca ttt gat tta agc aga gaa tgt ttg gga tat cca gaa gcg gat ttt	1104
Ala Phe Asp Leu Ser Arg Glu Cys Leu Gly Tyr Pro Glu Ala Asp Phe	
355 360 365	
ata acg tta gtt aat aac atg cgg ttc aaa ata gaa aat tgt aag gtt	1152
Ile Thr Leu Val Asn Asn Met Arg Phe Lys Ile Glu Asn Cys Lys Val	
370 375 380	
gta aat ttc aat att gaa aat act aat tgt tta aat aac ccg agt att	1200
Val Asn Phe Asn Ile Glu Asn Thr Asn Cys Leu Asn Asn Pro Ser Ile	
385 390 395 400	
gaa act ata tat gga aac ttt aac cag ttc gtc tca atc ttt aat gtc	1248
Glu Thr Ile Tyr Gly Asn Phe Asn Gln Phe Val Ser Ile Phe Asn Val	

	405	410	415	
gtc acc gat gtc	aaa aaa aga tta ttc	gag tga		1281
Val Thr Asp Val	Lys Lys Arg Leu Phe	Glu *		
	420	425		

<210> 300
 <211> 426
 <212> PRT
 <213> vaccinia virus

<400> 300

Met	Thr	Ser	Ser	Ala	Asp	Leu	Thr	Asn	Leu	Lys	Glu	Leu	Leu	Ser	Leu
1				5					10					15	
Tyr	Lys	Ser	Leu	Arg	Phe	Ser	Asp	Ser	Ala	Ala	Ile	Glu	Lys	Tyr	Asn
			20					25					30		
Ser	Leu	Val	Glu	Trp	Gly	Thr	Ser	Thr	Tyr	Trp	Lys	Ile	Gly	Val	Gln
		35				40						45			
Lys	Val	Ala	Asn	Val	Glu	Thr	Ser	Ile	Ser	Asp	Tyr	Tyr	Asp	Glu	Val
	50					55				60					
Lys	Asn	Lys	Pro	Phe	Asn	Ile	Asp	Pro	Gly	Tyr	Tyr	Ile	Phe	Leu	Pro
65				70					75					80	
Val	Tyr	Phe	Gly	Ser	Val	Phe	Ile	Tyr	Ser	Lys	Gly	Lys	Asn	Met	Val
				85				90						95	
Glu	Leu	Gly	Ser	Gly	Asn	Ser	Phe	Gln	Ile	Pro	Asp	Asn	Met	Arg	Ser
			100					105					110		
Ala	Cys	Asn	Lys	Val	Leu	Asp	Ser	Asp	Asn	Gly	Ile	Asp	Phe	Leu	Arg
		115					120					125			
Phe	Val	Leu	Leu	Asn	Asn	Arg	Trp	Ile	Met	Glu	Asp	Ala	Ile	Ser	Lys
	130					135					140				
Tyr	Gln	Ser	Pro	Val	Asn	Ile	Phe	Lys	Leu	Ala	Ser	Glu	Tyr	Gly	Leu
145					150					155					160
Asn	Ile	Pro	Lys	Tyr	Leu	Glu	Ile	Glu	Ile	Glu	Glu	Asp	Thr	Leu	Phe
				165				170						175	
Asp	Asp	Glu	Leu	Tyr	Ser	Ile	Ile	Glu	Arg	Ser	Phe	Asp	Asp	Lys	Phe
			180					185					190		
Pro	Lys	Ile	Ser	Ile	Ser	Tyr	Ile	Lys	Leu	Gly	Glu	Leu	Arg	Arg	Gln
		195					200					205			
Val	Val	Asp	Phe	Phe	Lys	Phe	Ser	Phe	Met	Tyr	Ile	Glu	Ser	Ile	Lys
	210						215					220			
Val	Asp	Arg	Ile	Gly	Asp	Asn	Ile	Phe	Ile	Pro	Ser	Val	Ile	Thr	Lys
225					230					235					240
Ser	Gly	Lys	Lys	Ile	Leu	Val	Lys	Asp	Val	Asp	His	Leu	Ile	Arg	Ser
				245					250					255	
Lys	Val	Arg	Glu	His	Thr	Phe	Val	Lys	Val	Lys	Lys	Lys	Asn	Thr	Phe
			260					265					270		
Ser	Ile	Leu	Tyr	Asp	Tyr	Asp	Gly	Asn	Gly	Thr	Glu	Thr	Arg	Gly	Glu
		275					280					285			
Val	Ile	Lys	Arg	Ile	Ile	Asp	Thr	Ile	Gly	Arg	Asp	Tyr	Tyr	Val	Asn
	290					295					300				
Gly	Lys	Tyr	Phe	Ser	Lys	Val	Gly	Ser	Ala	Gly	Leu	Lys	Gln	Leu	Thr
305					310					315					320
Asn	Lys	Leu	Asp	Ile	Asn	Glu	Cys	Ala	Thr	Val	Asp	Glu	Leu	Val	Asp
				325					330					335	
Glu	Ile	Asn	Lys	Ser	Gly	Thr	Val	Lys	Arg	Lys	Ile	Lys	Asn	Gln	Ser
		340						345					350		
Ala	Phe	Asp	Leu	Ser	Arg	Glu	Cys	Leu	Gly	Tyr	Pro	Glu	Ala	Asp	Phe
		355					360					365			

Ile	Thr	Leu	Val	Asn	Asn	Met	Arg	Phe	Lys	Ile	Glu	Asn	Cys	Lys	Val
370						375					380				
Val	Asn	Phe	Asn	Ile	Glu	Asn	Thr	Asn	Cys	Leu	Asn	Asn	Pro	Ser	Ile
385					390					395					400
Glu	Thr	Ile	Tyr	Gly	Asn	Phe	Asn	Gln	Phe	Val	Ser	Ile	Phe	Asn	Val
			405						410					415	
Val	Thr	Asp	Val	Lys	Lys	Arg	Leu	Phe	Glu						
			420					425							

<210> 301
 <211> 564
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(564)

<400> 301																
atg	gaa	act	tta	acc	agt	tcg	tct	caa	tct	tta	atg	tcg	tca	ccg	atg	48
Met	Glu	Thr	Leu	Thr	Ser	Ser	Ser	Gln	Ser	Leu	Met	Ser	Ser	Pro	Met	
1				5				10					15			
tca	aaa	aaa	gat	tat	tcg	agt	gaa	ata	ata	tgc	gcc	ttt	gat	ata	ggc	96
Ser	Lys	Lys	Asp	Tyr	Ser	Ser	Glu	Ile	Ile	Cys	Ala	Phe	Asp	Ile	Gly	
			20					25					30			
gca	aaa	aat	cct	gcc	aga	act	gtt	tta	gaa	gtc	aag	gat	aac	tcc	gtt	144
Ala	Lys	Asn	Pro	Ala	Arg	Thr	Val	Leu	Glu	Val	Lys	Asp	Asn	Ser	Val	
		35					40					45				
agg	gta	ttg	gat	ata	tca	aaa	tta	gac	tgg	agt	tct	gat	tgg	gaa	agg	192
Arg	Val	Leu	Asp	Ile	Ser	Lys	Leu	Asp	Trp	Ser	Ser	Asp	Trp	Glu	Arg	
	50					55					60					
cgc	ata	gct	aaa	gat	ttg	tca	caa	tat	gaa	tac	act	aca	gtt	ctt	cta	240
Arg	Ile	Ala	Lys	Asp	Leu	Ser	Gln	Tyr	Glu	Tyr	Thr	Thr	Val	Leu	Leu	
65					70				75					80		
gaa	cgt	cag	cct	aga	agg	tcg	ccg	tat	gtt	aaa	ttt	atc	tat	ttt	att	288
Glu	Arg	Gln	Pro	Arg	Arg	Ser	Pro	Tyr	Val	Lys	Phe	Ile	Tyr	Phe	Ile	
			85					90						95		
aaa	ggc	ttt	tta	tat	cat	aca	tcg	gct	gcc	aaa	gtt	att	tgc	gtc	tcg	336
Lys	Gly	Phe	Leu	Tyr	His	Thr	Ser	Ala	Ala	Lys	Val	Ile	Cys	Val	Ser	
			100					105					110			
cct	gtc	atg	tct	ggc	aat	tca	tat	aga	gat	cga	aaa	aag	aga	tcg	gtc	384
Pro	Val	Met	Ser	Gly	Asn	Ser	Tyr	Arg	Asp	Arg	Lys	Lys	Arg	Ser	Val	
		115					120					125				
gaa	gca	ttt	ctt	gat	tgg	atg	gac	aca	ttc	gga	ttg	cga	gac	tcc	gtt	432
Glu	Ala	Phe	Leu	Asp	Trp	Met	Asp	Thr	Phe	Gly	Leu	Arg	Asp	Ser	Val	
	130					135					140					
ccg	gat	aga	cgc	aaa	tta	gac	gat	gta	gcg	gat	agt	ttc	aat	ttg	gct	480
Pro	Asp	Arg	Arg	Lys	Leu	Asp	Asp	Val	Ala	Asp	Ser	Phe	Asn	Leu	Ala	
145					150				155						160	

atg aga tac gta tta gat aaa tgg aat act aat tat aca cct tat aat 528
Met Arg Tyr Val Leu Asp Lys Trp Asn Thr Asn Tyr Thr Pro Tyr Asn
165 170 175

agg tgt aaa tct aga aat tac ata aaa aaa atg taa 564
Arg Cys Lys Ser Arg Asn Tyr Ile Lys Lys Met *
180 185

<210> 302
<211> 187
<212> PRT
<213> vaccinia virus

<400> 302
Met Glu Thr Leu Thr Ser Ser Ser Gln Ser Leu Met Ser Ser Pro Met
1 5 10 15
Ser Lys Lys Asp Tyr Ser Ser Glu Ile Ile Cys Ala Phe Asp Ile Gly
20 25 30
Ala Lys Asn Pro Ala Arg Thr Val Leu Glu Val Lys Asp Asn Ser Val
35 40 45
Arg Val Leu Asp Ile Ser Lys Leu Asp Trp Ser Ser Asp Trp Glu Arg
50 55 60
Arg Ile Ala Lys Asp Leu Ser Gln Tyr Glu Tyr Thr Thr Val Leu Leu
65 70 75 80
Glu Arg Gln Pro Arg Arg Ser Pro Tyr Val Lys Phe Ile Tyr Phe Ile
85 90 95
Lys Gly Phe Leu Tyr His Thr Ser Ala Ala Lys Val Ile Cys Val Ser
100 105 110
Pro Val Met Ser Gly Asn Ser Tyr Arg Asp Arg Lys Lys Arg Ser Val
115 120 125
Glu Ala Phe Leu Asp Trp Met Asp Thr Phe Gly Leu Arg Asp Ser Val
130 135 140
Pro Asp Arg Arg Lys Leu Asp Asp Val Ala Asp Ser Phe Asn Leu Ala
145 150 155 160
Met Arg Tyr Val Leu Asp Lys Trp Asn Thr Asn Tyr Thr Pro Tyr Asn
165 170 175
Arg Cys Lys Ser Arg Asn Tyr Ile Lys Lys Met
180 185

<210> 303
<211> 1149
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(1149)

<400> 303
atg gat aat cta ttt acc ttt cta cat gaa ata gaa gat aga tat gcc 48
Met Asp Asn Leu Phe Thr Phe Leu His Glu Ile Glu Asp Arg Tyr Ala
1 5 10 15
aga act att ttt aac ttt cat cta ata agt tgc gat gaa ata gga gat 96
Arg Thr Ile Phe Asn Phe His Leu Ile Ser Cys Asp Glu Ile Gly Asp
20 25 30

ata tat ggt ctt atg aaa gaa cgc att tcc tca gag gat atg ttt gat	144
Ile Tyr Gly Leu Met Lys Glu Arg Ile Ser Ser Glu Asp Met Phe Asp	
35 40 45	
aat ata gtg tat aat aaa gat ata cat cat gcc att aag aaa cta gtg	192
Asn Ile Val Tyr Asn Lys Asp Ile His His Ala Ile Lys Lys Leu Val	
50 55 60	
tat tgc gac atc caa ctt act aaa cac att att aat cag aat acg tat	240
Tyr Cys Asp Ile Gln Leu Thr Lys His Ile Ile Asn Gln Asn Thr Tyr	
65 70 75 80	
ccg gta ttt aac gat tct tca caa gtg aaa tgt tgt cat tat ttc gat	288
Pro Val Phe Asn Asp Ser Ser Gln Val Lys Cys Cys His Tyr Phe Asp	
85 90 95	
ata aac tca gat aat agc aat att agc tct cgt aca gta gag ata ttt	336
Ile Asn Ser Asp Asn Ser Asn Ile Ser Ser Arg Thr Val Glu Ile Phe	
100 105 110	
gag agg gaa aag tca tct ctt gta tca tat att aaa act acc aat aag	384
Glu Arg Glu Lys Ser Ser Leu Val Ser Tyr Ile Lys Thr Thr Asn Lys	
115 120 125	
aag aga aag gtc aat tat ggg gaa ata aag aaa act gta cat gga ggc	432
Lys Arg Lys Val Asn Tyr Gly Glu Ile Lys Lys Thr Val His Gly Gly	
130 135 140	
act aat gca aat tac ttt tcc ggt aaa aag tct gat gag tat ctg agc	480
Thr Asn Ala Asn Tyr Phe Ser Gly Lys Lys Ser Asp Glu Tyr Leu Ser	
145 150 155 160	
act aca gtc agg tcc aac att aat caa cct tgg atc aaa acc att tct	528
Thr Thr Val Arg Ser Asn Ile Asn Gln Pro Trp Ile Lys Thr Ile Ser	
165 170 175	
aag aga atg aga gta gat atc att aat cac tct ata gta acg cgt gga	576
Lys Arg Met Arg Val Asp Ile Ile Asn His Ser Ile Val Thr Arg Gly	
180 185 190	
aaa agc tct ata tta caa act ata gaa att att ttt act aat aga aca	624
Lys Ser Ser Ile Leu Gln Thr Ile Glu Ile Ile Phe Thr Asn Arg Thr	
195 200 205	
tgt gtg aaa ata ttc aag gat tct act atg cac att att cta tcc aag	672
Cys Val Lys Ile Phe Lys Asp Ser Thr Met His Ile Ile Leu Ser Lys	
210 215 220	
gac aag gat gaa aag ggg tgt ata cac atg att gac aaa tta ttc tat	720
Asp Lys Asp Glu Lys Gly Cys Ile His Met Ile Asp Lys Leu Phe Tyr	
225 230 235 240	
gtc tat tat aat tta ttt ctg ttg ttc gaa gat atc atc caa aac gag	768
Val Tyr Tyr Asn Leu Phe Leu Leu Phe Glu Asp Ile Ile Gln Asn Glu	
245 250 255	
tac ttt aaa gaa gta gct aat gtt gta aac cac gta ctc acg gct acg	816
Tyr Phe Lys Glu Val Ala Asn Val Val Asn His Val Leu Thr Ala Thr	

260	265	270	
gca tta gat gag aaa tta ttc cta att aag aaa atg gct gaa cac gat			864
Ala Leu Asp Glu Lys Leu Phe Leu Ile Lys Lys Met Ala Glu His Asp			
275	280	285	
gtt tat gga gtt agc aat ttc aaa ata ggg atg ttt aac ctg aca ttt			912
Val Tyr Gly Val Ser Asn Phe Lys Ile Gly Met Phe Asn Leu Thr Phe			
290	295	300	
att aag tcg ttg gat cat acc gtt ttc ccc tct ctg tta gat gag gat			960
Ile Lys Ser Leu Asp His Thr Val Phe Pro Ser Leu Leu Asp Glu Asp			
305	310	315	320
agc aaa ata aag ttt ttt aag ggg aaa aag ctc aat att gta gca tta			1008
Ser Lys Ile Lys Phe Phe Lys Gly Lys Lys Leu Asn Ile Val Ala Leu			
325	330	335	
cga tct ctg gag gat tgt ata aat tac gtg act aaa tcc gag aat atg			1056
Arg Ser Leu Glu Asp Cys Ile Asn Tyr Val Thr Lys Ser Glu Asn Met			
340	345	350	
ata gaa atg atg aag gaa aga tcg act att tta aat agc ata gat ata			1104
Ile Glu Met Met Lys Glu Arg Ser Thr Ile Leu Asn Ser Ile Asp Ile			
355	360	365	
gaa acg gaa tcg gta gat cgt cta aaa gaa ttg ctt cta aaa tga			1149
Glu Thr Glu Ser Val Asp Arg Leu Lys Glu Leu Leu Leu Lys *			
370	375	380	

<210> 304
 <211> 382
 <212> PRT
 <213> vaccinia virus

<400> 304

Met Asp Asn Leu Phe Thr Phe Leu His Glu Ile Glu Asp Arg Tyr Ala	
1 5 10 15	
Arg Thr Ile Phe Asn Phe His Leu Ile Ser Cys Asp Glu Ile Gly Asp	
20 25 30	
Ile Tyr Gly Leu Met Lys Glu Arg Ile Ser Ser Glu Asp Met Phe Asp	
35 40 45	
Asn Ile Val Tyr Asn Lys Asp Ile His His Ala Ile Lys Lys Leu Val	
50 55 60	
Tyr Cys Asp Ile Gln Leu Thr Lys His Ile Ile Asn Gln Asn Thr Tyr	
65 70 75 80	
Pro Val Phe Asn Asp Ser Ser Gln Val Lys Cys Cys His Tyr Phe Asp	
85 90 95	
Ile Asn Ser Asp Asn Ser Asn Ile Ser Ser Arg Thr Val Glu Ile Phe	
100 105 110	
Glu Arg Glu Lys Ser Ser Leu Val Ser Tyr Ile Lys Thr Thr Asn Lys	
115 120 125	
Lys Arg Lys Val Asn Tyr Gly Glu Ile Lys Lys Thr Val His Gly Gly	
130 135 140	
Thr Asn Ala Asn Tyr Phe Ser Gly Lys Lys Ser Asp Glu Tyr Leu Ser	
145 150 155 160	
Thr Thr Val Arg Ser Asn Ile Asn Gln Pro Trp Ile Lys Thr Ile Ser	

Lys	Arg	Met	Arg	Val	Asp	Ile	Ile	Asn	His	Ser	Ile	Val	Thr	Arg	Gly
			180					185					190		
Lys	Ser	Ser	Ile	Leu	Gln	Thr	Ile	Glu	Ile	Ile	Phe	Thr	Asn	Arg	Thr
		195					200					205			
Cys	Val	Lys	Ile	Phe	Lys	Asp	Ser	Thr	Met	His	Ile	Ile	Leu	Ser	Lys
	210					215					220				
Asp	Lys	Asp	Glu	Lys	Gly	Cys	Ile	His	Met	Ile	Asp	Lys	Leu	Phe	Tyr
225					230					235					240
Val	Tyr	Tyr	Asn	Leu	Phe	Leu	Leu	Phe	Glu	Asp	Ile	Ile	Gln	Asn	Glu
			245						250					255	
Tyr	Phe	Lys	Glu	Val	Ala	Asn	Val	Val	Asn	His	Val	Leu	Thr	Ala	Thr
			260					265					270		
Ala	Leu	Asp	Glu	Lys	Leu	Phe	Leu	Ile	Lys	Lys	Met	Ala	Glu	His	Asp
		275					280					285			
Val	Tyr	Gly	Val	Ser	Asn	Phe	Lys	Ile	Gly	Met	Phe	Asn	Leu	Thr	Phe
	290					295					300				
Ile	Lys	Ser	Leu	Asp	His	Thr	Val	Phe	Pro	Ser	Leu	Leu	Asp	Glu	Asp
305					310					315					320
Ser	Lys	Ile	Lys	Phe	Phe	Lys	Gly	Lys	Lys	Leu	Asn	Ile	Val	Ala	Leu
				325					330					335	
Arg	Ser	Leu	Glu	Asp	Cys	Ile	Asn	Tyr	Val	Thr	Lys	Ser	Glu	Asn	Met
			340					345					350		
Ile	Glu	Met	Met	Lys	Glu	Arg	Ser	Thr	Ile	Leu	Asn	Ser	Ile	Asp	Ile
		355					360					365			
Glu	Thr	Glu	Ser	Val	Asp	Arg	Leu	Lys	Glu	Leu	Leu	Leu	Lys		
	370					375					380				

<210> 305
 <211> 3495
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(3495)

<400> 305																
atg	aaa	aaa	aac	act	gat	tca	gaa	atg	gat	caa	cga	cta	ggg	tat	aag	48
Met	Lys	Lys	Asn	Thr	Asp	Ser	Glu	Met	Asp	Gln	Arg	Leu	Gly	Tyr	Lys	
1				5					10					15		
ttt	ttg	gtg	cct	gat	cct	aaa	gcc	gga	gtt	ttt	tat	aga	ccg	tta	cat	96
Phe	Leu	Val	Pro	Asp	Pro	Lys	Ala	Gly	Val	Phe	Tyr	Arg	Pro	Leu	His	
			20					25					30			
ttc	caa	tat	gta	tcg	tat	tct	aat	ttt	ata	ttg	cat	cga	ttg	cat	gaa	144
Phe	Gln	Tyr	Val	Ser	Tyr	Ser	Asn	Phe	Ile	Leu	His	Arg	Leu	His	Glu	
			35				40					45				
atc	ttg	acc	gtc	aag	cgg	cca	ctc	tta	tcg	ttt	aag	aat	aat	aca	gaa	192
Ile	Leu	Thr	Val	Lys	Arg	Pro	Leu	Leu	Ser	Phe	Lys	Asn	Asn	Thr	Glu	
		50				55					60					
cga	att	atg	ata	gaa	att	agc	aat	gtt	aaa	gtg	act	cct	cca	gat	tac	240
Arg	Ile	Met	Ile	Glu	Ile	Ser	Asn	Val	Lys	Val	Thr	Pro	Pro	Asp	Tyr	
	65				70				75						80	

tca cct ata atc gcg agt att aaa ggt aag agt tat gac gca tta gcc	288
Ser Pro Ile Ile Ala Ser Ile Lys Gly Lys Ser Tyr Asp Ala Leu Ala	
85 90 95	
acg ttc act gta aat atc ttt aaa gag gta atg acc aaa gag ggt ata	336
Thr Phe Thr Val Asn Ile Phe Lys Glu Val Met Thr Lys Glu Gly Ile	
100 105 110	
tcc atc act aaa ata agt agt tat gag gga aaa gat tct cat ttg ata	384
Ser Ile Thr Lys Ile Ser Ser Tyr Glu Gly Lys Asp Ser His Leu Ile	
115 120 125	
aaa att ccg cta cta ata gga tac ggg aat aaa aat cca ctt gat aca	432
Lys Ile Pro Leu Leu Ile Gly Tyr Gly Asn Lys Asn Pro Leu Asp Thr	
130 135 140	
gcc aag tat ctt gtt cct aat gtc ata ggt gga gtc ttt atc aat aaa	480
Ala Lys Tyr Leu Val Pro Asn Val Ile Gly Gly Val Phe Ile Asn Lys	
145 150 155 160	
caa tct gtc gaa aaa gta gga att aat cta gta gaa aag att aca aca	528
Gln Ser Val Glu Lys Val Gly Ile Asn Leu Val Glu Lys Ile Thr Thr	
165 170 175	
tgg cca aaa ttt agg gtt gtt aag cca aac tca ttc act ttc tcg ttt	576
Trp Pro Lys Phe Arg Val Val Lys Pro Asn Ser Phe Thr Phe Ser Phe	
180 185 190	
tcc tcc gta tcc cct cct aat gta tta ccg aca aga tat cgc cat tac	624
Ser Ser Val Ser Pro Pro Asn Val Leu Pro Thr Arg Tyr Arg His Tyr	
195 200 205	
aag ata tct ctg gat ata tca caa ttg gaa gcg ttg aat ata tca tcg	672
Lys Ile Ser Leu Asp Ile Ser Gln Leu Glu Ala Leu Asn Ile Ser Ser	
210 215 220	
aca aag aca ttt ata acg gtc aat att gtt ttg ctg tct caa tat tta	720
Thr Lys Thr Phe Ile Thr Val Asn Ile Val Leu Leu Ser Gln Tyr Leu	
225 230 235 240	
tct aga gtg agt cta gaa ttc att aga cgt agt tta tca tac gat atg	768
Ser Arg Val Ser Leu Glu Phe Ile Arg Arg Ser Leu Ser Tyr Asp Met	
245 250 255	
cct cca gaa gtt gtc tat cta gta aac gcg ata ata gat agt gct aaa	816
Pro Pro Glu Val Val Tyr Leu Val Asn Ala Ile Ile Asp Ser Ala Lys	
260 265 270	
cga att act gaa tct att act gac ttt aat att gat aca tac att aat	864
Arg Ile Thr Glu Ser Ile Thr Asp Phe Asn Ile Asp Thr Tyr Ile Asn	
275 280 285	
gac ctg gtg gaa gct gaa cac att aaa caa aaa tct cag tta acg att	912
Asp Leu Val Glu Ala Glu His Ile Lys Gln Lys Ser Gln Leu Thr Ile	
290 295 300	
aac gag ttc aaa tat gaa atg ctg cat aac ttt tta cct cat atg aac	960
Asn Glu Phe Lys Tyr Glu Met Leu His Asn Phe Leu Pro His Met Asn	
305 310 315 320	

tat	aca	ccc	gat	caa	cta	aag	gga	ttt	tat	atg	ata	tct	tta	cta	aga	1008
Tyr	Thr	Pro	Asp	Gln	Leu	Lys	Gly	Phe	Tyr	Met	Ile	Ser	Leu	Leu	Arg	
				325				330						335		
aag	ttt	ctc	tac	tgt	atc	tac	cac	act	tct	aga	tat	cca	gat	aga	gat	1056
Lys	Phe	Leu	Tyr	Cys	Ile	Tyr	His	Thr	Ser	Arg	Tyr	Pro	Asp	Arg	Asp	
			340					345					350			
tcg	atg	gtt	tgt	cat	cgt	ata	cta	aca	tac	ggc	aaa	tat	ttt	gag	acg	1104
Ser	Met	Val	Cys	His	Arg	Ile	Leu	Thr	Tyr	Gly	Lys	Tyr	Phe	Glu	Thr	
		355					360					365				
ttg	gca	cat	gat	gaa	tta	gag	aat	tac	ata	ggc	aac	atc	cga	aac	gat	1152
Leu	Ala	His	Asp	Glu	Leu	Glu	Asn	Tyr	Ile	Gly	Asn	Ile	Arg	Asn	Asp	
	370					375					380					
atc	atg	aac	aat	cac	aag	aac	aga	ggc	act	tac	gcg	gta	aac	att	cat	1200
Ile	Met	Asn	Asn	His	Lys	Asn	Arg	Gly	Thr	Tyr	Ala	Val	Asn	Ile	His	
					390					395					400	
gta	cta	aca	act	cct	gga	ctt	aat	cat	gcg	ttt	tct	agc	tta	ttg	agt	1248
Val	Leu	Thr	Thr	Pro	Gly	Leu	Asn	His	Ala	Phe	Ser	Ser	Leu	Leu	Ser	
				405					410					415		
gga	aag	ttc	aaa	aag	tca	gac	ggt	agt	tat	cga	aca	cat	cct	cac	tat	1296
Gly	Lys	Phe	Lys	Lys	Ser	Asp	Gly	Ser	Tyr	Arg	Thr	His	Pro	His	Tyr	
			420					425					430			
tca	tgg	atg	cag	aat	att	tct	att	cct	agg	agt	gtt	gga	ttt	tat	ccg	1344
Ser	Trp	Met	Gln	Asn	Ile	Ser	Ile	Pro	Arg	Ser	Val	Gly	Phe	Tyr	Pro	
		435					440					445				
gat	caa	gta	aag	att	tca	aag	atg	ttt	tct	gtc	aga	aaa	tac	cat	cca	1392
Asp	Gln	Val	Lys	Ile	Ser	Lys	Met	Phe	Ser	Val	Arg	Lys	Tyr	His	Pro	
	450					455					460					
agt	caa	tat	ctt	tac	ttt	tgt	tca	tcg	gac	gtt	ccg	gaa	aga	ggt	cct	1440
Ser	Gln	Tyr	Leu	Tyr	Phe	Cys	Ser	Ser	Asp	Val	Pro	Glu	Arg	Gly	Pro	
	465				470				475					480		
cag	gta	ggt	tta	gta	tct	caa	ttg	tct	gtc	ttg	agt	tcc	att	aca	aat	1488
Gln	Val	Gly	Leu	Val	Ser	Gln	Leu	Ser	Val	Leu	Ser	Ser	Ile	Thr	Asn	
			485					490						495		
ata	cta	acg	tct	gag	tat	ttg	gat	ttg	gaa	aag	aaa	att	tgt	gag	tat	1536
Ile	Leu	Thr	Ser	Glu	Tyr	Leu	Asp	Leu	Glu	Lys	Lys	Ile	Cys	Glu	Tyr	
			500					505					510			
atc	aga	tca	tat	tat	aaa	gat	gat	ata	agt	tac	ttt	gaa	aca	gga	ttt	1584
Ile	Arg	Ser	Tyr	Tyr	Lys	Asp	Asp	Ile	Ser	Tyr	Phe	Glu	Thr	Gly	Phe	
		515				520						525				
cca	atc	act	ata	gaa	aat	gct	cta	gtc	gca	tct	ctt	aat	cca	aat	atg	1632
Pro	Ile	Thr	Ile	Glu	Asn	Ala	Leu	Val	Ala	Ser	Leu	Asn	Pro	Asn	Met	
	530					535					540					
ata	tgt	gat	ttt	gta	act	gac	ttt	aga	cgt	aga	aaa	cgg	atg	gga	ttc	1680
Ile	Cys	Asp	Phe	Val	Thr	Asp	Phe	Arg	Arg	Arg	Lys	Arg	Met	Gly	Phe	

545	550	555	560	
ttc ggt aac ttg gag gta ggt att act tta gtt agg gat cac atg aat				1728
Phe Gly Asn Leu Glu Val Gly Ile Thr Leu Val Arg Asp His Met Asn	565	570	575	
gaa att cgc att aat att gga gcg gga aga tta gtc aga cca ttc ttg				1776
Glu Ile Arg Ile Asn Ile Gly Ala Gly Arg Leu Val Arg Pro Phe Leu	580	585	590	
gtt gtg gat aac gga gag ctc atg atg gat gtg tgt ccg gag tta gaa				1824
Val Val Asp Asn Gly Glu Leu Met Met Asp Val Cys Pro Glu Leu Glu	595	600	605	
agc aga tta gac gat atg aca ttc tct gac att cag aaa gag ttt cca				1872
Ser Arg Leu Asp Asp Met Thr Phe Ser Asp Ile Gln Lys Glu Phe Pro	610	615	620	
cat gtc atc gaa atg gta gat ata gaa caa ttt act ttt agt aac gta				1920
His Val Ile Glu Met Val Asp Ile Glu Gln Phe Thr Phe Ser Asn Val	625	630	635	640
tgt gaa tcg gtt caa aaa ttt aga atg atg tca aag gat gaa aga aag				1968
Cys Glu Ser Val Gln Lys Phe Arg Met Met Ser Lys Asp Glu Arg Lys	645	650	655	
caa tac gat tta tgt gac ttt cct gcc gaa ttt aga gat gga tat gta				2016
Gln Tyr Asp Leu Cys Asp Phe Pro Ala Glu Phe Arg Asp Gly Tyr Val	660	665	670	
gca tct tca cta gtg gga atc aat cac aat tct gga ccc aga gct att				2064
Ala Ser Ser Leu Val Gly Ile Asn His Asn Ser Gly Pro Arg Ala Ile	675	680	685	
ctt gga tgt gct caa gct aaa caa gct atc tct tgt ctg agt tcg gat				2112
Leu Gly Cys Ala Gln Ala Lys Gln Ala Ile Ser Cys Leu Ser Ser Asp	690	695	700	
ata cga aat aaa ata gac aat gga att cat ttg atg tat cca gag agg				2160
Ile Arg Asn Lys Ile Asp Asn Gly Ile His Leu Met Tyr Pro Glu Arg	705	710	715	720
cca att gtc att agt aag gct tta gaa act tca aag att gcg gct aat				2208
Pro Ile Val Ile Ser Lys Ala Leu Glu Thr Ser Lys Ile Ala Ala Asn	725	730	735	
tgc ttc ggc caa cat gtt act ata gca tta atg tcg tac aaa ggt atc				2256
Cys Phe Gly Gln His Val Thr Ile Ala Leu Met Ser Tyr Lys Gly Ile	740	745	750	
aat caa gag gat gga att atc atc aaa aaa caa ttt att cag aga ggc				2304
Asn Gln Glu Asp Gly Ile Ile Ile Lys Lys Gln Phe Ile Gln Arg Gly	755	760	765	
ggt ctc gat ata gtt acc gca aag aaa cat caa gta gaa att ccg ttg				2352
Gly Leu Asp Ile Val Thr Ala Lys Lys His Gln Val Glu Ile Pro Leu	770	775	780	
gaa aac ttt aat aac aaa gaa aga gat agg tct aac gcc tat tca aaa				2400

Glu	Asn	Phe	Asn	Asn	Lys	Glu	Arg	Asp	Arg	Ser	Asn	Ala	Tyr	Ser	Lys		
785					790					795					800		
tta	gaa	agt	aat	gga	tta	gtt	aga	ctg	aat	gct	ttc	ttg	gaa	tcc	gga	2448	
Leu	Glu	Ser	Asn	Gly	Leu	Val	Arg	Leu	Asn	Ala	Phe	Leu	Glu	Ser	Gly		
				805					810					815			
gac	gct	atg	gca	cga	aat	atc	tca	tca	aga	act	ctt	gaa	gat	gat	ttt	2496	
Asp	Ala	Met	Ala	Arg	Asn	Ile	Ser	Ser	Arg	Thr	Leu	Glu	Asp	Asp	Phe		
			820					825					830				
gct	aga	gat	aat	cag	att	agc	ttc	gat	gtt	tcc	gag	aaa	tat	acc	gat	2544	
Ala	Arg	Asp	Asn	Gln	Ile	Ser	Phe	Asp	Val	Ser	Glu	Lys	Tyr	Thr	Asp		
		835					840					845					
atg	tac	aaa	tct	cgc	gtt	gaa	cga	gta	caa	gta	gaa	ctt	act	gac	aaa	2592	
Met	Tyr	Lys	Ser	Arg	Val	Glu	Arg	Val	Gln	Val	Glu	Leu	Thr	Asp	Lys		
	850					855					860						
gtt	aag	gta	cga	gta	tta	acc	atg	aaa	gaa	aga	aga	ccc	att	cta	gga	2640	
Val	Lys	Val	Arg	Val	Leu	Thr	Met	Lys	Glu	Arg	Arg	Pro	Ile	Leu	Gly		
	865				870				875						880		
gac	aaa	ttt	acc	act	aga	acg	agt	caa	aag	gga	aca	gtc	gcg	tat	gtc	2688	
Asp	Lys	Phe	Thr	Thr	Arg	Thr	Ser	Gln	Lys	Gly	Thr	Val	Ala	Tyr	Val		
			885					890						895			
gcg	gat	gaa	acg	gaa	ctt	cca	tac	gac	gaa	aat	ggc	atc	aca	cca	gat	2736	
Ala	Asp	Glu	Thr	Glu	Leu	Pro	Tyr	Asp	Glu	Asn	Gly	Ile	Thr	Pro	Asp		
			900					905					910				
gtc	att	att	aat	tct	aca	tcc	atc	ttc	tct	aga	aaa	act	ata	tct	atg	2784	
Val	Ile	Ile	Asn	Ser	Thr	Ser	Ile	Phe	Ser	Arg	Lys	Thr	Ile	Ser	Met		
	915						920					925					
ttg	ata	gaa	gtt	att	tta	aca	gcc	gca	tat	tct	gct	aag	ccg	tac	aac	2832	
Leu	Ile	Glu	Val	Ile	Leu	Thr	Ala	Ala	Tyr	Ser	Ala	Lys	Pro	Tyr	Asn		
	930					935					940						
aat	aag	gga	gaa	aac	cga	cct	gtc	tgt	ttt	cct	agt	agt	aac	gaa	aca	2880	
Asn	Lys	Gly	Glu	Asn	Arg	Pro	Val	Cys	Phe	Pro	Ser	Ser	Asn	Glu	Thr		
	945				950					955					960		
tcc	atc	gat	aca	tat	atg	caa	ttc	gct	aaa	caa	tgt	tat	gag	cat	tca	2928	
Ser	Ile	Asp	Thr	Tyr	Met	Gln	Phe	Ala	Lys	Gln	Cys	Tyr	Glu	His	Ser		
			965					970						975			
aat	ccg	aaa	ttg	tct	gat	gaa	gaa	tta	tgc	gat	aaa	atc	ttt	tgt	gaa	2976	
Asn	Pro	Lys	Leu	Ser	Asp	Glu	Glu	Leu	Ser	Asp	Lys	Ile	Phe	Cys	Glu		
			980					985					990				
aag	att	ctc	tat	gat	cct	gaa	acg	gat	aag	cct	tat	gca	tcc	aaa	gta	3024	
Lys	Ile	Leu	Tyr	Asp	Pro	Glu	Thr	Asp	Lys	Pro	Tyr	Ala	Ser	Lys	Val		
		995					1000					1005					
ttt	ttt	gga	cca	att	tat	tac	ttg	cgt	ctg	aga	cat	tta	act	cag	gac	3072	
Phe	Gly	Pro	Ile	Tyr	Tyr	Leu	Arg	Leu	Arg	His	Leu	Thr	Gln	Asp			
	1010					1015				1020							

aag gca acc gtt aga tgt aga ggt aaa aag acg aag ctc att aga caa 3120
Lys Ala Thr Val Arg Cys Arg Gly Lys Lys Thr Lys Leu Ile Arg Gln
1025 1030 1035 1040
gcg aat gag gga cga aaa cgt gga gga ggt att aag ttt gga gaa atg 3168
Ala Asn Glu Gly Arg Lys Arg Gly Gly Gly Ile Lys Phe Gly Glu Met
1045 1050 1055
gag aga gac tgt tta ata gcg cat ggc gca gcc aat act att aca gaa 3216
Glu Arg Asp Cys Leu Ile Ala His Gly Ala Ala Asn Thr Ile Thr Glu
1060 1065 1070
gtt ttg aaa gat tcg gaa gaa gat tat caa gat gtg tat gtt tgt gaa 3264
Val Leu Lys Asp Ser Glu Glu Asp Tyr Gln Asp Val Tyr Val Cys Glu
1075 1080 1085
aat tgt gga gac ata gca gca caa atc aag ggt att aat aca tgt ctt 3312
Asn Cys Gly Asp Ile Ala Ala Gln Ile Lys Gly Ile Asn Thr Cys Leu
1090 1095 1100
aga tgt tca aaa ctt aat ctc tct cct ctc tta aca aaa att gat acc 3360
Arg Cys Ser Lys Leu Asn Leu Ser Pro Leu Leu Thr Lys Ile Asp Thr
1105 1110 1115 1120
acg cac gta tct aaa gta ttt ctt act caa atg aac gcc aga ggc gta 3408
Thr His Val Ser Lys Val Phe Leu Thr Gln Met Asn Ala Arg Gly Val
1125 1130 1135
aaa gtt aaa tta gat ttc gaa cga agg cct cct tcg ttt tat aaa cca 3456
Lys Val Lys Leu Asp Phe Glu Arg Arg Pro Pro Ser Phe Tyr Lys Pro
1140 1145 1150
tta gat aaa gtt gat ctc aag ccg tct ttt ctg gtg taa 3495
Leu Asp Lys Val Asp Leu Lys Pro Ser Phe Leu Val *
1155 1160

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<212> PRT
<213> vaccinia virus

<400> 306
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Phe Leu Val Pro Asp Pro Lys Ala Gly Val Phe Tyr Arg Pro Leu His
20 25 30
Phe Gln Tyr Val Ser Tyr Ser Asn Phe Ile Leu His Arg Leu His Glu
35 40 45
Ile Leu Thr Val Lys Arg Pro Leu Leu Ser Phe Lys Asn Asn Thr Glu
50 55 60
Arg Ile Met Ile Glu Ile Ser Asn Val Lys Val Thr Pro Pro Asp Tyr
65 70 75 80
Ser Pro Ile Ile Ala Ser Ile Lys Gly Lys Ser Tyr Asp Ala Leu Ala
85 90 95
Thr Phe Thr Val Asn Ile Phe Lys Glu Val Met Thr Lys Glu Gly Ile
100 105 110
Ser Ile Thr Lys Ile Ser Ser Tyr Glu Gly Lys Asp Ser His Leu Ile
115 120 125

Lys	Ile	Pro	Leu	Leu	Ile	Gly	Tyr	Gly	Asn	Lys	Asn	Pro	Leu	Asp	Thr
130						135					140				
Ala	Lys	Tyr	Leu	Val	Pro	Asn	Val	Ile	Gly	Gly	Val	Phe	Ile	Asn	Lys
145					150					155					160
Gln	Ser	Val	Glu	Lys	Val	Gly	Ile	Asn	Leu	Val	Glu	Lys	Ile	Thr	Thr
				165					170					175	
Trp	Pro	Lys	Phe	Arg	Val	Val	Lys	Pro	Asn	Ser	Phe	Thr	Phe	Ser	Phe
			180					185					190		
Ser	Ser	Val	Ser	Pro	Pro	Asn	Val	Leu	Pro	Thr	Arg	Tyr	Arg	His	Tyr
		195				200						205			
Lys	Ile	Ser	Leu	Asp	Ile	Ser	Gln	Leu	Glu	Ala	Leu	Asn	Ile	Ser	Ser
	210					215					220				
Thr	Lys	Thr	Phe	Ile	Thr	Val	Asn	Ile	Val	Leu	Leu	Ser	Gln	Tyr	Leu
225					230					235					240
Ser	Arg	Val	Ser	Leu	Glu	Phe	Ile	Arg	Arg	Ser	Leu	Ser	Tyr	Asp	Met
				245					250					255	
Pro	Pro	Glu	Val	Tyr	Leu	Val	Asn	Ala	Ile	Ile	Asp	Ser	Ala	Lys	
			260				265					270			
Arg	Ile	Thr	Glu	Ser	Ile	Thr	Asp	Phe	Asn	Ile	Asp	Thr	Tyr	Ile	Asn
	275					280						285			
Asp	Leu	Val	Glu	Ala	Glu	His	Ile	Lys	Gln	Lys	Ser	Gln	Leu	Thr	Ile
	290					295					300				
Asn	Glu	Phe	Lys	Tyr	Glu	Met	Leu	His	Asn	Phe	Leu	Pro	His	Met	Asn
305					310					315					320
Tyr	Thr	Pro	Asp	Gln	Leu	Lys	Gly	Phe	Tyr	Met	Ile	Ser	Leu	Leu	Arg
				325					330					335	
Lys	Phe	Leu	Tyr	Cys	Ile	Tyr	His	Thr	Ser	Arg	Tyr	Pro	Asp	Arg	Asp
			340					345					350		
Ser	Met	Val	Cys	His	Arg	Ile	Leu	Thr	Tyr	Gly	Lys	Tyr	Phe	Glu	Thr
		355					360						365		
Leu	Ala	His	Asp	Glu	Leu	Glu	Asn	Tyr	Ile	Gly	Asn	Ile	Arg	Asn	Asp
	370					375					380				
Ile	Met	Asn	Asn	His	Lys	Asn	Arg	Gly	Thr	Tyr	Ala	Val	Asn	Ile	His
385					390					395					400
Val	Leu	Thr	Thr	Pro	Gly	Leu	Asn	His	Ala	Phe	Ser	Ser	Leu	Leu	Ser
				405					410					415	
Gly	Lys	Phe	Lys	Lys	Ser	Asp	Gly	Ser	Tyr	Arg	Thr	His	Pro	His	Tyr
			420					425					430		
Ser	Trp	Met	Gln	Asn	Ile	Ser	Ile	Pro	Arg	Ser	Val	Gly	Phe	Tyr	Pro
		435					440					445			
Asp	Gln	Val	Lys	Ile	Ser	Lys	Met	Phe	Ser	Val	Arg	Lys	Tyr	His	Pro
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Ser	Gln	Tyr	Leu	Tyr	Phe	Cys	Ser	Ser	Asp	Val	Pro	Glu	Arg	Gly	Pro
465					470					475					480
Gln	Val	Gly	Leu	Val	Ser	Gln	Leu	Ser	Val	Leu	Ser	Ser	Ile	Thr	Asn
				485					490					495	
Ile	Leu	Thr	Ser	Glu	Tyr	Leu	Asp	Leu	Glu	Lys	Lys	Ile	Cys	Glu	Tyr
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Ile	Arg	Ser	Tyr	Tyr	Lys	Asp	Asp	Ile	Ser	Tyr	Phe	Glu	Thr	Gly	Phe
		515					520					525			
Pro	Ile	Thr	Ile	Glu	Asn	Ala	Leu	Val	Ala	Ser	Leu	Asn	Pro	Asn	Met
						535					540				
Ile	Cys	Asp	Phe	Val	Thr	Asp	Phe	Arg	Arg	Arg	Lys	Arg	Met	Gly	Phe
545					550					555					560
Phe	Gly	Asn	Leu	Glu	Val	Gly	Ile	Thr	Leu	Val	Arg	Asp	His	Met	Asn
				565					570					575	
Glu	Ile	Arg	Ile	Asn	Ile	Gly	Ala	Gly	Arg	Leu	Val	Arg	Pro	Phe	Leu
			580					585					590		
Val	Val	Asp	Asn	Gly	Glu	Leu	Met	Met	Asp	Val	Cys	Pro	Glu	Leu	Glu

		595					600				605					
Ser	Arg	Leu	Asp	Asp	Met	Thr	Phe	Ser	Asp	Ile	Gln	Lys	Glu	Phe	Pro	
	610					615					620					
His	Val	Ile	Glu	Met	Val	Asp	Ile	Glu	Gln	Phe	Thr	Phe	Ser	Asn	Val	
625					630					635					640	
Cys	Glu	Ser	Val	Gln	Lys	Phe	Arg	Met	Met	Ser	Lys	Asp	Glu	Arg	Lys	
				645					650					655		
Gln	Tyr	Asp	Leu	Cys	Asp	Phe	Pro	Ala	Glu	Phe	Arg	Asp	Gly	Tyr	Val	
			660					665					670			
Ala	Ser	Ser	Leu	Val	Gly	Ile	Asn	His	Asn	Ser	Gly	Pro	Arg	Ala	Ile	
		675					680					685				
Leu	Gly	Cys	Ala	Gln	Ala	Lys	Gln	Ala	Ile	Ser	Cys	Leu	Ser	Ser	Asp	
	690					695					700					
Ile	Arg	Asn	Lys	Ile	Asp	Asn	Gly	Ile	His	Leu	Met	Tyr	Pro	Glu	Arg	
705					710					715					720	
Pro	Ile	Val	Ile	Ser	Lys	Ala	Leu	Glu	Thr	Ser	Lys	Ile	Ala	Ala	Asn	
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Cys	Phe	Gly	Gln	His	Val	Thr	Ile	Ala	Leu	Met	Ser	Tyr	Lys	Gly	Ile	
			740					745					750			
Asn	Gln	Glu	Asp	Gly	Ile	Ile	Ile	Lys	Lys	Gln	Phe	Ile	Gln	Arg	Gly	
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Gly	Leu	Asp	Ile	Val	Thr	Ala	Lys	Lys	His	Gln	Val	Glu	Ile	Pro	Leu	
	770					775					780					
Glu	Asn	Phe	Asn	Asn	Lys	Glu	Arg	Asp	Arg	Ser	Asn	Ala	Tyr	Ser	Lys	
785					790					795					800	
Leu	Glu	Ser	Asn	Gly	Leu	Val	Arg	Leu	Asn	Ala	Phe	Leu	Glu	Ser	Gly	
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Asp	Ala	Met	Ala	Arg	Asn	Ile	Ser	Ser	Arg	Thr	Leu	Glu	Asp	Asp	Phe	
			820					825					830			
Ala	Arg	Asp	Asn	Gln	Ile	Ser	Phe	Asp	Val	Ser	Glu	Lys	Tyr	Thr	Asp	
		835					840					845				
Met	Tyr	Lys	Ser	Arg	Val	Glu	Arg	Val	Gln	Val	Glu	Leu	Thr	Asp	Lys	
						855					860					
Val	Lys	Val	Arg	Val	Leu	Thr	Met	Lys	Glu	Arg	Arg	Pro	Ile	Leu	Gly	
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Asp	Lys	Phe	Thr	Thr	Arg	Thr	Ser	Gln	Lys	Gly	Thr	Val	Ala	Tyr	Val	
				885					890					895		
Ala	Asp	Glu	Thr	Glu	Leu	Pro	Tyr	Asp	Glu	Asn	Gly	Ile	Thr	Pro	Asp	
			900					905					910			
Val	Ile	Ile	Asn	Ser	Thr	Ser	Ile	Phe	Ser	Arg	Lys	Thr	Ile	Ser	Met	
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Leu	Ile	Glu	Val	Ile	Leu	Thr	Ala	Ala	Tyr	Ser	Ala	Lys	Pro	Tyr	Asn	
	930					935					940					
Asn	Lys	Gly	Glu	Asn	Arg	Pro	Val	Cys	Phe	Pro	Ser	Ser	Asn	Glu	Thr	
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Ser	Ile	Asp	Thr	Tyr	Met	Gln	Phe	Ala	Lys	Gln	Cys	Tyr	Glu	His	Ser	
				965					970					975		
Asn	Pro	Lys	Leu	Ser	Asp	Glu	Glu	Leu	Ser	Asp	Lys	Ile	Phe	Cys	Glu	
			980					985					990			
Lys	Ile	Leu	Tyr	Asp	Pro	Glu	Thr	Asp	Lys	Pro	Tyr	Ala	Ser	Lys	Val	
		995					1000					1005				
Phe	Phe	Gly	Pro	Ile	Tyr	Tyr	Leu	Arg	Leu	Arg	His	Leu	Thr	Gln	Asp	
	1010					1015					1020					
Lys	Ala	Thr	Val	Arg	Cys	Arg	Gly	Lys	Lys	Thr	Lys	Leu	Ile	Arg	Gln	
1025					1030					1035					1040	
Ala	Asn	Glu	Gly	Arg	Lys	Arg	Gly	Gly	Gly	Ile	Lys	Phe	Gly	Glu	Met	
				1045					1050					1055		
Glu	Arg	Asp	Cys	Leu	Ile	Ala	His	Gly	Ala	Ala	Asn	Thr	Ile	Thr	Glu	
			1060					1065					1070			

Val	Leu	Lys	Asp	Ser	Glu	Glu	Asp	Tyr	Gln	Asp	Val	Tyr	Val	Cys	Glu
	1075						1080				1085				
Asn	Cys	Gly	Asp	Ile	Ala	Ala	Gln	Ile	Lys	Gly	Ile	Asn	Thr	Cys	Leu
	1090						1095				1100				
Arg	Cys	Ser	Lys	Leu	Asn	Leu	Ser	Pro	Leu	Leu	Thr	Lys	Ile	Asp	Thr
	1105				1110					1115				1120	
Thr	His	Val	Ser	Lys	Val	Phe	Leu	Thr	Gln	Met	Asn	Ala	Arg	Gly	Val
			1125						1130					1135	
Lys	Val	Lys	Leu	Asp	Phe	Glu	Arg	Arg	Pro	Pro	Ser	Phe	Tyr	Lys	Pro
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Leu	Asp	Lys	Val	Asp	Leu	Lys	Pro	Ser	Phe	Leu	Val				
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<220>
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<400> 307

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Ser	Gln	Val	Ala	Val	Thr	Pro	Pro	Pro	Lys	Pro	Glu	Thr	Pro	Gln	Ile	
		20					25						30			
ttc	gaa	tat	cag	acg	tcc	gat	tct	ata	gtt	aac	aat	cca	cgc	cca	ttt	144
Phe	Glu	Tyr	Gln	Thr	Ser	Asp	Ser	Ile	Val	Asn	Asn	Pro	Arg	Pro	Phe	
		35					40					45				
tat	aat	tcg	gat	ctc	gaa	ttt	gat	gat	att	gat	atg	tat	cta	cta	cca	192
Tyr	Asn	Ser	Asp	Leu	Glu	Phe	Asp	Asp	Ile	Asp	Met	Tyr	Leu	Leu	Pro	
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aac																195
Asn																
65																

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 <211> 65
 <212> PRT
 <213> vaccinia virus

<400> 308

Met	Ser	Asn	Gln	Asn	Ile	Pro	Gln	Leu	Ser	Glu	Tyr	Gln	Thr	Ser	Val
1				5					10					15	
Ser	Gln	Val	Ala	Val	Thr	Pro	Pro	Pro	Lys	Pro	Glu	Thr	Pro	Gln	Ile
		20					25						30		
Phe	Glu	Tyr	Gln	Thr	Ser	Asp	Ser	Ile	Val	Asn	Asn	Pro	Arg	Pro	Phe
		35					40				45				
Tyr	Asn	Ser	Asp	Leu	Glu	Phe	Asp	Asp	Ile	Asp	Met	Tyr	Leu	Leu	Pro
	50					55					60				

Asn
65

<210> 309
<211> 462
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(462)

<400> 309
atg gaa aca atc aaa gcg ttg gag aaa ttt atg gag ttc gat cgc ctt 48
Met Glu Thr Ile Lys Ala Leu Glu Lys Phe Met Glu Phe Asp Arg Leu
1 5 10 15
cag aaa gac tgc tct gat aaa ctc gat aga gag agg gaa aga cgc atg 96
Gln Lys Asp Cys Ser Asp Lys Leu Asp Arg Glu Arg Glu Arg Arg Met
20 25 30
aag gct gaa cgt gaa atc gct cgt aaa aac tgc gga ggt aac cca tgc 144
Lys Ala Glu Arg Glu Ile Ala Arg Lys Asn Cys Gly Gly Asn Pro Cys
35 40 45
gaa cgt gaa ttg aaa tct gaa cgt agt aac gtg aag agg ttg gaa tat 192
Glu Arg Glu Leu Lys Ser Glu Arg Ser Asn Val Lys Arg Leu Glu Tyr
50 55 60
caa cta gat gct gag aaa gaa aaa gtt aag ttc tac aaa aga gaa cta 240
Gln Leu Asp Ala Glu Lys Glu Lys Val Lys Phe Tyr Lys Arg Glu Leu
65 70 75 80
gaa cgt gat cgg tat ctt tct agt aga tat ctt acc tct tct tca gat 288
Glu Arg Asp Arg Tyr Leu Ser Ser Arg Tyr Leu Thr Ser Ser Ser Asp
85 90 95
cca cat gag aaa cca tta cca aat tat aca ttt cct cgc att aaa aat 336
Pro His Glu Lys Pro Leu Pro Asn Tyr Thr Phe Pro Arg Ile Lys Asn
100 105 110
gta tct ccg ttg aca act gag gct aca ggt tct gta gaa gta gca cct 384
Val Ser Pro Leu Thr Thr Glu Ala Thr Gly Ser Val Glu Val Ala Pro
115 120 125
cca tcc aca gac gtt acc gaa ccg att agt gat gtg aca cca tcg gtg 432
Pro Ser Thr Asp Val Thr Glu Pro Ile Ser Asp Val Thr Pro Ser Val
130 135 140
gat gtc gaa cca gaa cat ccc cca gct ttc 462
Asp Val Glu Pro Glu His Pro Pro Ala Phe
145 150

<210> 310
<211> 154
<212> PRT
<213> vaccinia virus

<400> 310

Met Glu Thr Ile Lys Ala Leu Glu Lys Phe Met Glu Phe Asp Arg Leu
1 5 10 15
Gln Lys Asp Cys Ser Asp Lys Leu Asp Arg Glu Arg Glu Arg Arg Met
20 25 30
Lys Ala Glu Arg Glu Ile Ala Arg Lys Asn Cys Gly Gly Asn Pro Cys
35 40 45
Glu Arg Glu Leu Lys Ser Glu Arg Ser Asn Val Lys Arg Leu Glu Tyr
50 55 60
Gln Leu Asp Ala Glu Lys Glu Lys Val Lys Phe Tyr Lys Arg Glu Leu
65 70 75 80
Glu Arg Asp Arg Tyr Leu Ser Ser Arg Tyr Leu Thr Ser Ser Ser Asp
85 90 95
Pro His Glu Lys Pro Leu Pro Asn Tyr Thr Phe Pro Arg Ile Lys Asn
100 105 110
Val Ser Pro Leu Thr Thr Glu Ala Thr Gly Ser Val Glu Val Ala Pro
115 120 125
Pro Ser Thr Asp Val Thr Glu Pro Ile Ser Asp Val Thr Pro Ser Val
130 135 140
Asp Val Glu Pro Glu His Pro Pro Ala Phe
145 150

<210> 311

<211> 684

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(684)

<400> 311

atg aaa cca atg ccg aaa cag aga gag atg cga cgt ctt aga gat aga 48
Met Lys Pro Met Pro Lys Gln Arg Glu Met Arg Arg Leu Arg Asp Arg
1 5 10 15
atc tca gat att gaa aga cag ttg agt gac tgc aga cgt aat aat gaa 96
Ile Ser Asp Ile Glu Arg Gln Leu Ser Asp Cys Arg Arg Asn Asn Glu
20 25 30
agc aat gct gat atg gaa aga gag atg caa cgt ctt aga gat aga atc 144
Ser Asn Ala Asp Met Glu Arg Glu Met Gln Arg Leu Arg Asp Arg Ile
35 40 45
atg gat ctt gat aga cag ctt aac gag tgt aaa cgc aac ggt aac gga 192
Met Asp Leu Asp Arg Gln Leu Asn Glu Cys Lys Arg Asn Gly Asn Gly
50 55 60
gca tct tcc gag gag gta aat agg cta aag act aga atc agg gat ctt 240
Ala Ser Ser Glu Glu Val Asn Arg Leu Lys Thr Arg Ile Arg Asp Leu
65 70 75 80
gaa cga tct cta gag atc tgc tca aag gat gaa tca gaa ctc tat tcg 288
Glu Arg Ser Leu Glu Ile Cys Ser Lys Asp Glu Ser Glu Leu Tyr Ser
85 90 95
gca tat aaa act aaa ctc gga cgt gct agg gaa caa att agt aac ttg 336
Ala Tyr Lys Thr Lys Leu Gly Arg Ala Arg Glu Gln Ile Ser Asn Leu

100	105	110	
caa gaa agt cta cgt aga gag cgt gaa tct gac aaa aca gat agt tac			384
Gln Glu Ser Leu Arg Arg Glu Arg Glu Ser Asp Lys Thr Asp Ser Tyr			
115	120	125	
tac agg agg gaa ttg act cgc gaa aga aat aaa atc gta gaa ttg gaa			432
Tyr Arg Arg Glu Leu Thr Arg Glu Arg Asn Lys Ile Val Glu Leu Glu			
130	135	140	
aaa gaa ctt aat aag tgt ttc gat gcc aag tac atc gac gaa atc aat			480
Lys Glu Leu Asn Lys Cys Phe Asp Ala Lys Tyr Ile Asp Glu Ile Asn			
145	150	155	160
tcc aag aaa acc cgt att tct gat ctc gaa cga caa cta gca gcc tgt			528
Ser Lys Lys Thr Arg Ile Ser Asp Leu Glu Arg Gln Leu Ala Ala Cys			
165	170	175	
aaa tct aat ggt ggt agc aat gga aac atg gac caa tac aaa cgg gaa			576
Lys Ser Asn Gly Gly Ser Asn Gly Asn Met Asp Gln Tyr Lys Arg Glu			
180	185	190	
att gaa tct ctt aaa cgc gag ctc gcc gag tgt aga cgt ggt aac aat			624
Ile Glu Ser Leu Lys Arg Glu Leu Ala Glu Cys Arg Arg Gly Asn Asn			
195	200	205	
gga tcc cat agt gat tgt aag tac tat gac gaa gaa gca aga gat tgt			672
Gly Ser His Ser Asp Cys Lys Tyr Tyr Asp Glu Glu Ala Arg Asp Cys			
210	215	220	
gtt aag agc tga			684
Val Lys Ser *			
225			

<210> 312
 <211> 227
 <212> PRT
 <213> vaccinia virus

<400> 312

Met Lys Pro Met Pro Lys Gln Arg Glu Met Arg Arg Leu Arg Asp Arg	
1 5 10 15	
Ile Ser Asp Ile Glu Arg Gln Leu Ser Asp Cys Arg Arg Asn Asn Glu	
20 25 30	
Ser Asn Ala Asp Met Glu Arg Glu Met Gln Arg Leu Arg Asp Arg Ile	
35 40 45	
Met Asp Leu Asp Arg Gln Leu Asn Glu Cys Lys Arg Asn Gly Asn Gly	
50 55 60	
Ala Ser Ser Glu Glu Val Asn Arg Leu Lys Thr Arg Ile Arg Asp Leu	
65 70 75 80	
Glu Arg Ser Leu Glu Ile Cys Ser Lys Asp Glu Ser Glu Leu Tyr Ser	
85 90 95	
Ala Tyr Lys Thr Lys Leu Gly Arg Ala Arg Glu Gln Ile Ser Asn Leu	
100 105 110	
Gln Glu Ser Leu Arg Arg Glu Arg Glu Ser Asp Lys Thr Asp Ser Tyr	
115 120 125	
Tyr Arg Arg Glu Leu Thr Arg Glu Arg Asn Lys Ile Val Glu Leu Glu	
130 135 140	

Lys	Glu	Leu	Asn	Lys	Cys	Phe	Asp	Ala	Lys	Tyr	Ile	Asp	Glu	Ile	Asn
145					150					155					160
Ser	Lys	Lys	Thr	Arg	Ile	Ser	Asp	Leu	Glu	Arg	Gln	Leu	Ala	Ala	Cys
				165					170						175
Lys	Ser	Asn	Gly	Gly	Ser	Asn	Gly	Asn	Met	Asp	Gln	Tyr	Lys	Arg	Glu
			180					185					190		
Ile	Glu	Ser	Leu	Lys	Arg	Glu	Leu	Ala	Glu	Cys	Arg	Arg	Gly	Asn	Asn
		195					200					205			
Gly	Ser	His	Ser	Asp	Cys	Lys	Tyr	Tyr	Asp	Glu	Glu	Ala	Arg	Asp	Cys
	210					215					220				
Val	Lys	Ser													
225															

<210> 313
 <211> 2163
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(2163)

<400> 313																
atg	gag	gtc	acg	aac	ctt	att	gaa	aaa	tgt	acc	aag	cac	tcc	aaa	gat	48
Met	Glu	Val	Thr	Asn	Leu	Ile	Glu	Lys	Cys	Thr	Lys	His	Ser	Lys	Asp	
1				5					10					15		
ttc	gcc	act	gag	gta	gaa	aaa	cta	tgg	aac	gat	gag	ttg	agt	tct	gaa	96
Phe	Ala	Thr	Glu	Val	Glu	Lys	Leu	Trp	Asn	Asp	Glu	Leu	Ser	Ser	Glu	
			20					25					30			
tca	ggt	ctc	tca	aga	aaa	aca	aga	aat	gta	att	cgt	aat	att	ctt	cgt	144
Ser	Gly	Leu	Ser	Arg	Lys	Thr	Arg	Asn	Val	Ile	Arg	Asn	Ile	Leu	Arg	
			35				40					45				
gat	atc	act	aag	tca	tta	act	aca	gat	aag	aaa	tca	aag	tgt	ttc	cgt	192
Asp	Ile	Thr	Lys	Ser	Leu	Thr	Thr	Asp	Lys	Lys	Ser	Lys	Cys	Phe	Arg	
	50					55					60					
ata	cta	gaa	cgt	tcg	acg	att	aac	gga	gag	cag	att	aaa	gat	gta	tat	240
Ile	Leu	Glu	Arg	Ser	Thr	Ile	Asn	Gly	Glu	Gln	Ile	Lys	Asp	Val	Tyr	
	65				70				75					80		
aaa	act	att	ttt	aat	aat	ggt	gtt	gat	gtg	gag	tct	aga	atc	aac	act	288
Lys	Thr	Ile	Phe	Asn	Asn	Gly	Val	Asp	Val	Glu	Ser	Arg	Ile	Asn	Thr	
				85				90						95		
aca	gga	aag	tat	gtt	cta	ttt	aca	gtt	atg	act	tat	gtt	gct	gct	gaa	336
Thr	Gly	Lys	Tyr	Val	Leu	Phe	Thr	Val	Met	Thr	Tyr	Val	Ala	Ala	Glu	
			100					105					110			
cta	cga	ctc	att	aag	tca	gac	gag	ata	ttc	gct	ctt	cta	tca	aga	ttt	384
Leu	Arg	Leu	Ile	Lys	Ser	Asp	Glu	Ile	Phe	Ala	Leu	Leu	Ser	Arg	Phe	
			115				120					125				
ttt	aac	atg	ata	tgt	gat	att	cat	aga	aaa	tac	gga	tgt	ggt	aat	atg	432
Phe	Asn	Met	Ile	Cys	Asp	Ile	His	Arg	Lys	Tyr	Gly	Cys	Gly	Asn	Met	
	130					135					140					

ttt gtt ggt att cct gct gct cta att att ctg ttg gaa att gat cac	480
Phe Val Gly Ile Pro Ala Ala Leu Ile Ile Leu Leu Glu Ile Asp His	
145 150 155 160	
atc aat aaa ctg ttt agc gtg ttt agt aca aga tat gac gcc aag aca	528
Ile Asn Lys Leu Phe Ser Val Phe Ser Thr Arg Tyr Asp Ala Lys Thr	
165 170 175	
tac cta tac act gaa tat ttt ctt ttc ctt aac att aat cat tat cta	576
Tyr Leu Tyr Thr Glu Tyr Phe Leu Phe Leu Asn Ile Asn His Tyr Leu	
180 185 190	
ctt agt ggt tca gat tta ttt atc aac gta gca tat ggt gct gta tct	624
Leu Ser Gly Ser Asp Leu Phe Ile Asn Val Ala Tyr Gly Ala Val Ser	
195 200 205	
ttt tct tca ccc att agt gtt cca gat tat atc atg gaa gca ctg aca	672
Phe Ser Ser Pro Ile Ser Val Pro Asp Tyr Ile Met Glu Ala Leu Thr	
210 215 220	
ttt aag gca tgt gat cat att atg aaa tct gga gat cta aaa tat aca	720
Phe Lys Ala Cys Asp His Ile Met Lys Ser Gly Asp Leu Lys Tyr Thr	
225 230 235 240	
tat gcg ttt act aaa aag gtt aag gat ctg ttt aat act aaa tct gat	768
Tyr Ala Phe Thr Lys Lys Val Lys Asp Leu Phe Asn Thr Lys Ser Asp	
245 250 255	
tct gtt tat caa tac gtt aga ctt cat gaa atg tca tat gat ggt gtt	816
Ser Val Tyr Gln Tyr Val Arg Leu His Glu Met Ser Tyr Asp Gly Val	
260 265 270	
tca gaa gat acg gat gat gac gat gag gta ttc gct atc ctt aac ttg	864
Ser Glu Asp Thr Asp Asp Asp Asp Glu Val Phe Ala Ile Leu Asn Leu	
275 280 285	
agt att gat tcc agc gtt gat aga tac aga aac aga gtt ctt cta cta	912
Ser Ile Asp Ser Ser Val Asp Arg Tyr Arg Asn Arg Val Leu Leu Leu	
290 295 300	
act ccc gaa gtc gcg tct ctt aga aaa gaa tat tct gaa gta gaa ccc	960
Thr Pro Glu Val Ala Ser Leu Arg Lys Glu Tyr Ser Glu Val Glu Pro	
305 310 315 320	
gat tat aaa tac ttg atg gat gag gaa gtg ccc gcg tac gac aag cat	1008
Asp Tyr Lys Tyr Leu Met Asp Glu Glu Val Pro Ala Tyr Asp Lys His	
325 330 335	
ttg cct aag cct att act aac act ggt att gaa gaa cca cac gct act	1056
Leu Pro Lys Pro Ile Thr Asn Thr Gly Ile Glu Glu Pro His Ala Thr	
340 345 350	
gga gga gat gag gac caa cca att aag gtt gtc cat ccc cct aat aat	1104
Gly Gly Asp Glu Asp Gln Pro Ile Lys Val Val His Pro Pro Asn Asn	
355 360 365	
gat aaa gat gat gct atc aag cca tac aat cca tta gaa gat cct aat	1152
Asp Lys Asp Asp Ala Ile Lys Pro Tyr Asn Pro Leu Glu Asp Pro Asn	

370	375	380	
tat gtt ccc aca att aca aga acg gct ata gga atc gct gat tac caa Tyr Val Pro Thr Ile Thr Arg Thr Ala Ile Gly Ile Ala Asp Tyr Gln 385 390 395 400			1200
cta gtt att aat aaa cta att gaa tgg tta gat aaa tgc gag gaa gaa Leu Val Ile Asn Lys Leu Ile Glu Trp Leu Asp Lys Cys Glu Glu Glu 405 410 415			1248
tgc gga aat agt gga gag ttt aaa aca gag ttg gaa gaa gcc aag aga Cys Gly Asn Ser Gly Glu Phe Lys Thr Glu Leu Glu Glu Ala Lys Arg 420 425 430			1296
aaa ctc acc gaa ttg aat gca gaa ctt agt gat aaa ctc agt aag att Lys Leu Thr Glu Leu Asn Ala Leu Ser Asp Lys Leu Ser Lys Ile 435 440 445			1344
agg act ttg gaa agg gat tct gtt tat aaa acc gaa aga atc gac cga Arg Thr Leu Glu Arg Asp Ser Val Tyr Lys Thr Glu Arg Ile Asp Arg 450 455 460			1392
ctt aca aaa gag atc aaa gaa cac agg gat att caa aat ggg aca gat Leu Thr Lys Glu Ile Lys Glu His Arg Asp Ile Gln Asn Gly Thr Asp 465 470 475 480			1440
gat ggt tca gat tta tta gaa att gat aag aag act atc cga gaa ttg Asp Gly Ser Asp Leu Leu Glu Ile Asp Lys Lys Thr Ile Arg Glu Leu 485 490 495			1488
aga gaa tcg ctt gat agg gaa cga gaa atg cgt tca gaa cta gaa aag Arg Glu Ser Leu Asp Arg Glu Arg Glu Met Arg Ser Glu Leu Glu Lys 500 505 510			1536
gaa ctg gat act att agg aat gga aaa gta gat gga tct tgt caa cga Glu Leu Asp Thr Ile Arg Asn Gly Lys Val Asp Gly Ser Cys Gln Arg 515 520 525			1584
gaa ctt gaa ctc agt cgt atg tgg cta aaa caa cgc gat gac gat ctc Glu Leu Glu Leu Ser Arg Met Trp Leu Lys Gln Arg Asp Asp Asp Leu 530 535 540			1632
cga gct gaa atc gat aaa cgt cgt aat gtc gaa tgg gaa ctg tcc aga Arg Ala Glu Ile Asp Lys Arg Arg Asn Val Glu Trp Glu Leu Ser Arg 545 550 555 560			1680
ctt cgt agg gat atc aag gaa tgc gac aaa tac aag gag gat ctt gat Leu Arg Arg Asp Ile Lys Glu Cys Asp Lys Tyr Lys Glu Asp Leu Asp 565 570 575			1728
aag gcc aag aca aat att agt aac tac gta agc aaa atc agt act cta Lys Ala Lys Thr Asn Ile Ser Asn Tyr Val Ser Lys Ile Ser Thr Leu 580 585 590			1776
gaa tca gaa att gct aaa tat caa caa gat agg gac acg ctt tct gta Glu Ser Glu Ile Ala Lys Tyr Gln Gln Asp Arg Asp Thr Leu Ser Val 595 600 605			1824
gta cgc aga gaa ctt gag gaa gaa cga cga cgc gtt aga gat ctc gat			1872

Val	Arg	Arg	Glu	Leu	Glu	Glu	Glu	Arg	Arg	Arg	Val	Arg	Asp	Leu	Asp		
610						615					620						
gaa	tgt	aca	cgc	aac	cag	gaa	gac	acg	caa	gaa	gtt	gat	gca	ctg	cgt	1920	
Glu	Cys	Thr	Arg	Asn	Gln	Glu	Asp	Thr	Gln	Glu	Val	Asp	Ala	Leu	Arg		
625					630					635					640		
tcg	cgt	att	aga	gaa	cta	gag	aat	aag	ttg	acc	gac	tgc	atc	gag	agc	1968	
Ser	Arg	Ile	Arg	Glu	Leu	Glu	Asn	Lys	Leu	Thr	Asp	Cys	Ile	Glu	Ser		
				645					650					655			
gga	gga	gga	aat	ctt	aca	gag	att	agc	aga	ctc	caa	tct	aaa	atc	tca	2016	
Gly	Gly	Gly	Asn	Leu	Thr	Glu	Ile	Ser	Arg	Leu	Gln	Ser	Lys	Ile	Ser		
			660					665					670				
gat	ctt	gaa	aga	caa	ctg	agt	gaa	tgc	cgt	gaa	aat	gct	aca	gag	att	2064	
Asp	Leu	Glu	Arg	Gln	Leu	Ser	Glu	Cys	Arg	Glu	Asn	Ala	Thr	Glu	Ile		
		675					680					685					
agc	aga	ctc	caa	tct	aga	ata	tca	gat	ctt	gaa	aga	cag	ttg	aac	gac	2112	
Ser	Arg	Leu	Gln	Ser	Arg	Ile	Ser	Asp	Leu	Glu	Arg	Gln	Leu	Asn	Asp		
		690				695					700						
tgt	aga	cgt	aat	aat	gaa	acc	aat	gcc	gaa	aca	gag	aga	gat	gcg	acg	2160	
Cys	Arg	Arg	Asn	Asn	Glu	Thr	Asn	Ala	Glu	Thr	Glu	Arg	Asp	Ala	Thr		
705					710				715						720		
tct																2163	
Ser																	

<210> 314
 <211> 721
 <212> PRT
 <213> vaccinia virus

<400> 314
 Met Glu Val Thr Asn Leu Ile Glu Lys Cys Thr Lys His Ser Lys Asp
 1 5 10 15
 Phe Ala Thr Glu Val Glu Lys Leu Trp Asn Asp Glu Leu Ser Ser Glu
 20 25 30
 Ser Gly Leu Ser Arg Lys Thr Arg Asn Val Ile Arg Asn Ile Leu Arg
 35 40 45
 Asp Ile Thr Lys Ser Leu Thr Thr Asp Lys Lys Ser Lys Cys Phe Arg
 50 55 60
 Ile Leu Glu Arg Ser Thr Ile Asn Gly Glu Gln Ile Lys Asp Val Tyr
 65 70 75 80
 Lys Thr Ile Phe Asn Asn Gly Val Asp Val Glu Ser Arg Ile Asn Thr
 85 90 95
 Thr Gly Lys Tyr Val Leu Phe Thr Val Met Thr Tyr Val Ala Ala Glu
 100 105 110
 Leu Arg Leu Ile Lys Ser Asp Glu Ile Phe Ala Leu Leu Ser Arg Phe
 115 120 125
 Phe Asn Met Ile Cys Asp Ile His Arg Lys Tyr Gly Cys Gly Asn Met
 130 135 140
 Phe Val Gly Ile Pro Ala Leu Ile Ile Leu Glu Ile Asp His
 145 150 155 160
 Ile Asn Lys Leu Phe Ser Val Phe Ser Thr Arg Tyr Asp Ala Lys Thr

				165				170					175				
Tyr	Leu	Tyr	Thr	Glu	Tyr	Phe	Leu	Phe	Leu	Asn	Ile	Asn	His	Tyr	Leu		
			180					185					190				
Leu	Ser	Gly	Ser	Asp	Leu	Phe	Ile	Asn	Val	Ala	Tyr	Gly	Ala	Val	Ser		
		195					200					205					
Phe	Ser	Ser	Pro	Ile	Ser	Val	Pro	Asp	Tyr	Ile	Met	Glu	Ala	Leu	Thr		
	210					215					220						
Phe	Lys	Ala	Cys	Asp	His	Ile	Met	Lys	Ser	Gly	Asp	Leu	Lys	Tyr	Thr		
225					230					235					240		
Tyr	Ala	Phe	Thr	Lys	Lys	Val	Lys	Asp	Leu	Phe	Asn	Thr	Lys	Ser	Asp		
			245						250					255			
Ser	Val	Tyr	Gln	Tyr	Val	Arg	Leu	His	Glu	Met	Ser	Tyr	Asp	Gly	Val		
		260					265						270				
Ser	Glu	Asp	Thr	Asp	Asp	Asp	Asp	Glu	Val	Phe	Ala	Ile	Leu	Asn	Leu		
	275						280					285					
Ser	Ile	Asp	Ser	Ser	Val	Asp	Arg	Tyr	Arg	Asn	Arg	Val	Leu	Leu	Leu		
290						295					300						
Thr	Pro	Glu	Val	Ala	Ser	Leu	Arg	Lys	Glu	Tyr	Ser	Glu	Val	Glu	Pro		
305					310					315					320		
Asp	Tyr	Lys	Tyr	Leu	Met	Asp	Glu	Glu	Val	Pro	Ala	Tyr	Asp	Lys	His		
			325						330					335			
Leu	Pro	Lys	Pro	Ile	Thr	Asn	Thr	Gly	Ile	Glu	Glu	Pro	His	Ala	Thr		
			340					345					350				
Gly	Gly	Asp	Glu	Asp	Gln	Pro	Ile	Lys	Val	Val	His	Pro	Pro	Asn	Asn		
	355						360					365					
Asp	Lys	Asp	Asp	Ala	Ile	Lys	Pro	Tyr	Asn	Pro	Leu	Glu	Asp	Pro	Asn		
	370					375					380						
Tyr	Val	Pro	Thr	Ile	Thr	Arg	Thr	Ala	Ile	Gly	Ile	Ala	Asp	Tyr	Gln		
385					390					395					400		
Leu	Val	Ile	Asn	Lys	Leu	Ile	Glu	Trp	Leu	Asp	Lys	Cys	Glu	Glu	Glu		
			405					410						415			
Cys	Gly	Asn	Ser	Gly	Glu	Phe	Lys	Thr	Glu	Leu	Glu	Glu	Ala	Lys	Arg		
			420					425					430				
Lys	Leu	Thr	Glu	Leu	Asn	Ala	Glu	Leu	Ser	Asp	Lys	Leu	Ser	Lys	Ile		
	435						440					445					
Arg	Thr	Leu	Glu	Arg	Asp	Ser	Val	Tyr	Lys	Thr	Glu	Arg	Ile	Asp	Arg		
	450					455					460						
Leu	Thr	Lys	Glu	Ile	Lys	Glu	His	Arg	Asp	Ile	Gln	Asn	Gly	Thr	Asp		
465					470					475					480		
Asp	Gly	Ser	Asp	Leu	Leu	Glu	Ile	Asp	Lys	Lys	Thr	Ile	Arg	Glu	Leu		
			485						490					495			
Arg	Glu	Ser	Leu	Asp	Arg	Glu	Arg	Glu	Met	Arg	Ser	Glu	Leu	Glu	Lys		
			500					505					510				
Glu	Leu	Asp	Thr	Ile	Arg	Asn	Gly	Lys	Val	Asp	Gly	Ser	Cys	Gln	Arg		
	515						520					525					
Glu	Leu	Glu	Leu	Ser	Arg	Met	Trp	Leu	Lys	Gln	Arg	Asp	Asp	Asp	Leu		
	530					535					540						
Arg	Ala	Glu	Ile	Asp	Lys	Arg	Arg	Asn	Val	Glu	Trp	Glu	Leu	Ser	Arg		
545					550					555					560		
Leu	Arg	Arg	Asp	Ile	Lys	Glu	Cys	Asp	Lys	Tyr	Lys	Glu	Asp	Leu	Asp		
			565						570					575			
Lys	Ala	Lys	Thr	Asn	Ile	Ser	Asn	Tyr	Val	Ser	Lys	Ile	Ser	Thr	Leu		
			580					585					590				
Glu	Ser	Glu	Ile	Ala	Lys	Tyr	Gln	Gln	Asp	Arg	Asp	Thr	Leu	Ser	Val		
	595						600					605					
Val	Arg	Arg	Glu	Leu	Glu	Glu	Glu	Arg	Arg	Arg	Val	Arg	Asp	Leu	Asp		
	610					615					620						
Glu	Cys	Thr	Arg	Asn	Gln	Glu	Asp	Thr	Gln	Glu	Val	Asp	Ala	Leu	Arg		
625					630					635					640		

Ser Arg Ile Arg Glu Leu Glu Asn Lys Leu Thr Asp Cys Ile Glu Ser
 645 650 655
 Gly Gly Gly Asn Leu Thr Glu Ile Ser Arg Leu Gln Ser Lys Ile Ser
 660 665 670
 Asp Leu Glu Arg Gln Leu Ser Glu Cys Arg Glu Asn Ala Thr Glu Ile
 675 680 685
 Ser Arg Leu Gln Ser Arg Ile Ser Asp Leu Glu Arg Gln Leu Asn Asp
 690 695 700
 Cys Arg Arg Asn Asn Glu Thr Asn Ala Glu Thr Glu Arg Asp Ala Thr
 705 710 715 720
 Ser

<210> 315
 <211> 1503
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1503)

<400> 315
 atg gcg aac att ata aat tta tgg aac gga att gta cca acg gtt caa 48
 Met Ala Asn Ile Ile Asn Leu Trp Asn Gly Ile Val Pro Thr Val Gln
 1 5 10 15

 gat gtt aat gtt gcg agc att act gcg ttt aaa tct atg ata gat gaa 96
 Asp Val Asn Val Ala Ser Ile Thr Ala Phe Lys Ser Met Ile Asp Glu
 20 25 30

 aca tgg gat aaa aaa atc gaa gca aat aca tgc atc agt aga aaa cat 144
 Thr Trp Asp Lys Lys Ile Glu Ala Asn Thr Cys Ile Ser Arg Lys His
 35 40 45

 aga aac att att cac gaa gtt att agg gac ttt atg aaa gcc tat cct 192
 Arg Asn Ile Ile His Glu Val Ile Arg Asp Phe Met Lys Ala Tyr Pro
 50 55 60

 aaa atg gat gag aat aaa aaa tct cca tta gga gcc cca atg caa tgg 240
 Lys Met Asp Glu Asn Lys Lys Ser Pro Leu Gly Ala Pro Met Gln Trp
 65 70 75 80

 cta aca caa tat tat att tta aag aat gaa tat cat aag acc atg cta 288
 Leu Thr Gln Tyr Tyr Ile Leu Lys Asn Glu Tyr His Lys Thr Met Leu
 85 90 95

 gcg tat gat aat gga tca ttg aat aca aaa ttt aaa acg tta aac att 336
 Ala Tyr Asp Asn Gly Ser Leu Asn Thr Lys Phe Lys Thr Leu Asn Ile
 100 105 110

 tat atg att act aac gtt ggt caa tat att tta tat ata gta ttt tgt 384
 Tyr Met Ile Thr Asn Val Gly Gln Tyr Ile Leu Tyr Ile Val Phe Cys
 115 120 125

 ata ata tct ggt aag aat cac gat ggt act cct tat ata tac gat tct 432
 Ile Ile Ser Gly Lys Asn His Asp Gly Thr Pro Tyr Ile Tyr Asp Ser
 130 135 140

gag ata acg agc aat gat aaa aat ctt att aat gag cgt atc aag tat	480
Glu Ile Thr Ser Asn Asp Lys Asn Leu Ile Asn Glu Arg Ile Lys Tyr	
145 150 155 160	
gca tgt aag caa ata tta cac ggt caa tta act ata gct ctg aga att	528
Ala Cys Lys Gln Ile Leu His Gly Gln Leu Thr Ile Ala Leu Arg Ile	
165 170 175	
aga aat aaa ttc atg ttt ata gga tca ccc atg tat tta tgg ttt aac	576
Arg Asn Lys Phe Met Phe Ile Gly Ser Pro Met Tyr Leu Trp Phe Asn	
180 185 190	
gta aac ggg tca cag gta tat cat gat ata tat gat cgt aat gcc ggt	624
Val Asn Gly Ser Gln Val Tyr His Asp Ile Tyr Asp Arg Asn Ala Gly	
195 200 205	
ttt cat aat aaa gag ata ggt aga cta cta tac gca ttt atg tac tat	672
Phe His Asn Lys Glu Ile Gly Arg Leu Leu Tyr Ala Phe Met Tyr Tyr	
210 215 220	
cta tct ata agt ggt aga ttt ttg aat gat ttc gca cta tta aag ttt	720
Leu Ser Ile Ser Gly Arg Phe Leu Asn Asp Phe Ala Leu Leu Lys Phe	
225 230 235 240	
acg tat tta gga gaa tcc tgg aca ttt agt ttg agt gtt cct gaa tat	768
Thr Tyr Leu Gly Glu Ser Trp Thr Phe Ser Leu Ser Val Pro Glu Tyr	
245 250 255	
ata tta tat ggt tta gga tat tct gtt ttc gat act att gaa aaa ttt	816
Ile Leu Tyr Gly Leu Gly Tyr Ser Val Phe Asp Thr Ile Glu Lys Phe	
260 265 270	
agc aat gat gct ata ctc gtt tat att aga aca aac aat aga aat gga	864
Ser Asn Asp Ala Ile Leu Val Tyr Ile Arg Thr Asn Asn Arg Asn Gly	
275 280 285	
tat gat tat gta gag ttt aat aaa aaa gga att gct aag gtg aca gaa	912
Tyr Asp Tyr Val Glu Phe Asn Lys Lys Gly Ile Ala Lys Val Thr Glu	
290 295 300	
gct aaa ccc gat aac gat aag cga att cat gct ata aga ctc atc aac	960
Ala Lys Pro Asp Asn Asp Lys Arg Ile His Ala Ile Arg Leu Ile Asn	
305 310 315 320	
gat agt agt gat gtt caa cat ata cat ttt gga ttt aga aat atg gta	1008
Asp Ser Ser Asp Val Gln His Ile His Phe Gly Phe Arg Asn Met Val	
325 330 335	
ata ata gac aat gaa tgc gct aat att cag tcg agt gct gaa aat gca	1056
Ile Ile Asp Asn Glu Cys Ala Asn Ile Gln Ser Ser Ala Glu Asn Ala	
340 345 350	
act gat aca gga cat cat caa gat agc aaa ata aat atc gaa gtc gaa	1104
Thr Asp Thr Gly His His Gln Asp Ser Lys Ile Asn Ile Glu Val Glu	
355 360 365	
gat gat gtc ata gac gat gat gat tat aat cca aaa ccc act ccg ata	1152
Asp Asp Val Ile Asp Asp Asp Asp Tyr Asn Pro Lys Pro Thr Pro Ile	

370	375	380	
ccg gag cct cac cct aga cca ccg ttt ccc aga cat gaa tat cat aag			1200
Pro Glu Pro His Pro Arg Pro Pro Phe Pro Arg His Glu Tyr His Lys			
385	390	395	400
agg ccg aaa ctt ctt cct gta gaa gaa cct gat cct gtc aaa aaa gac			1248
Arg Pro Lys Leu Leu Pro Val Glu Glu Pro Asp Pro Val Lys Lys Asp			
	405	410	415
gcg gat cgt ata aga ctt gat aat cat ata tta aac aca ttg gat cat			1296
Ala Asp Arg Ile Arg Leu Asp Asn His Ile Leu Asn Thr Leu Asp His			
	420	425	430
aat ctt aat ttc atc gga cac tat tgt tgt gat aca gcg gca gtt gat			1344
Asn Leu Asn Phe Ile Gly His Tyr Cys Cys Asp Thr Ala Ala Val Asp			
	435	440	445
agg tta gaa cat cac atc gaa aca ttg gga caa tat gca gta ata ctg			1392
Arg Leu Glu His His Ile Glu Thr Leu Gly Gln Tyr Ala Val Ile Leu			
	450	455	460
gca aga aag ata aat atg caa aca tta ctg ttc cca tgg cca tta cct			1440
Ala Arg Lys Ile Asn Met Gln Thr Leu Leu Phe Pro Trp Pro Leu Pro			
	465	470	480
act gtc cat cca cat gcg ata gat ggt agt att cca cca cat ggg aga			1488
Thr Val His Pro His Ala Ile Asp Gly Ser Ile Pro Pro His Gly Arg			
	485	490	495
tct acg att tta taa			1503
Ser Thr Ile Leu *			
	500		

<210> 316
 <211> 500
 <212> PRT
 <213> vaccinia virus

<400> 316

Met	Ala	Asn	Ile	Ile	Asn	Leu	Trp	Asn	Gly	Ile	Val	Pro	Thr	Val	Gln
1				5					10					15	
Asp	Val	Asn	Val	Ala	Ser	Ile	Thr	Ala	Phe	Lys	Ser	Met	Ile	Asp	Glu
			20					25					30		
Thr	Trp	Asp	Lys	Lys	Ile	Glu	Ala	Asn	Thr	Cys	Ile	Ser	Arg	Lys	His
		35				40					45				
Arg	Asn	Ile	Ile	His	Glu	Val	Ile	Arg	Asp	Phe	Met	Lys	Ala	Tyr	Pro
	50				55						60				
Lys	Met	Asp	Glu	Asn	Lys	Lys	Ser	Pro	Leu	Gly	Ala	Pro	Met	Gln	Trp
65				70					75					80	
Leu	Thr	Gln	Tyr	Tyr	Ile	Leu	Lys	Asn	Glu	Tyr	His	Lys	Thr	Met	Leu
			85					90					95		
Ala	Tyr	Asp	Asn	Gly	Ser	Leu	Asn	Thr	Lys	Phe	Lys	Thr	Leu	Asn	Ile
			100					105					110		
Tyr	Met	Ile	Thr	Asn	Val	Gly	Gln	Tyr	Ile	Leu	Tyr	Ile	Val	Phe	Cys
	115					120						125			
Ile	Ile	Ser	Gly	Lys	Asn	His	Asp	Gly	Thr	Pro	Tyr	Ile	Tyr	Asp	Ser
	130					135					140				

Glu	Ile	Thr	Ser	Asn	Asp	Lys	Asn	Leu	Ile	Asn	Glu	Arg	Ile	Lys	Tyr
145					150					155					160
Ala	Cys	Lys	Gln	Ile	Leu	His	Gly	Gln	Leu	Thr	Ile	Ala	Leu	Arg	Ile
			165						170						175
Arg	Asn	Lys	Phe	Met	Phe	Ile	Gly	Ser	Pro	Met	Tyr	Leu	Trp	Phe	Asn
			180					185					190		
Val	Asn	Gly	Ser	Gln	Val	Tyr	His	Asp	Ile	Tyr	Asp	Arg	Asn	Ala	Gly
		195					200					205			
Phe	His	Asn	Lys	Glu	Ile	Gly	Arg	Leu	Leu	Tyr	Ala	Phe	Met	Tyr	Tyr
	210					215					220				
Leu	Ser	Ile	Ser	Gly	Arg	Phe	Leu	Asn	Asp	Phe	Ala	Leu	Leu	Lys	Phe
225					230					235					240
Thr	Tyr	Leu	Gly	Glu	Ser	Trp	Thr	Phe	Ser	Leu	Ser	Val	Pro	Glu	Tyr
			245						250					255	
Ile	Leu	Tyr	Gly	Leu	Gly	Tyr	Ser	Val	Phe	Asp	Thr	Ile	Glu	Lys	Phe
			260					265					270		
Ser	Asn	Asp	Ala	Ile	Leu	Val	Tyr	Ile	Arg	Thr	Asn	Asn	Arg	Asn	Gly
		275					280					285			
Tyr	Asp	Tyr	Val	Glu	Phe	Asn	Lys	Lys	Gly	Ile	Ala	Lys	Val	Thr	Glu
	290					295					300				
Ala	Lys	Pro	Asp	Asn	Asp	Lys	Arg	Ile	His	Ala	Ile	Arg	Leu	Ile	Asn
305					310					315					320
Asp	Ser	Ser	Asp	Val	Gln	His	Ile	His	Phe	Gly	Phe	Arg	Asn	Met	Val
				325					330					335	
Ile	Ile	Asp	Asn	Glu	Cys	Ala	Asn	Ile	Gln	Ser	Ser	Ala	Glu	Asn	Ala
			340					345					350		
Thr	Asp	Thr	Gly	His	His	Gln	Asp	Ser	Lys	Ile	Asn	Ile	Glu	Val	Glu
		355					360					365			
Asp	Asp	Val	Ile	Asp	Asp	Asp	Asp	Tyr	Asn	Pro	Lys	Pro	Thr	Pro	Ile
	370					375					380				
Pro	Glu	Pro	His	Pro	Arg	Pro	Pro	Phe	Pro	Arg	His	Glu	Tyr	His	Lys
385					390					395					400
Arg	Pro	Lys	Leu	Leu	Pro	Val	Glu	Glu	Pro	Asp	Pro	Val	Lys	Lys	Asp
			405						410					415	
Ala	Asp	Arg	Ile	Arg	Leu	Asp	Asn	His	Ile	Leu	Asn	Thr	Leu	Asp	His
			420					425					430		
Asn	Leu	Asn	Phe	Ile	Gly	His	Tyr	Cys	Cys	Asp	Thr	Ala	Ala	Val	Asp
		435					440					445			
Arg	Leu	Glu	His	His	Ile	Glu	Thr	Leu	Gly	Gln	Tyr	Ala	Val	Ile	Leu
	450					455					460				
Ala	Arg	Lys	Ile	Asn	Met	Gln	Thr	Leu	Leu	Phe	Pro	Trp	Pro	Leu	Pro
465					470					475					480
Thr	Val	His	Pro	His	Ala	Ile	Asp	Gly	Ser	Ile	Pro	Pro	His	Gly	Arg
				485					490					495	
Ser	Thr	Ile	Leu												
			500												

<210> 317
 <211> 330
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(330)

<400> 317
 atg gac gga act ctt ttc ccc gga gat gac gat ctt gca att cca gca 48

Met	Asp	Gly	Thr	Leu	Phe	Pro	Gly	Asp	Asp	Asp	Leu	Ala	Ile	Pro	Ala		
1				5					10					15			
act	gaa	ttt	ttt	tct	aca	aag	gct	gct	aaa	aag	cca	gag	gct	aaa	cgc	96	
Thr	Glu	Phe	Phe	Ser	Thr	Lys	Ala	Ala	Lys	Lys	Pro	Glu	Ala	Lys	Arg		
			20					25					30				
gaa	gca	att	gtt	aaa	gcc	gat	gaa	gac	gac	aat	gag	gaa	act	ctc	aaa	144	
Glu	Ala	Ile	Val	Lys	Ala	Asp	Glu	Asp	Asp	Asn	Glu	Glu	Thr	Leu	Lys		
			35				40					45					
caa	cgg	cta	act	aat	ttg	gaa	aaa	aag	att	act	aat	gta	aca	aca	aag	192	
Gln	Arg	Leu	Thr	Asn	Leu	Glu	Lys	Lys	Ile	Thr	Asn	Val	Thr	Thr	Lys		
		50				55				60							
ttt	gaa	caa	ata	gaa	aag	tgt	tgt	aaa	cgc	aac	gat	gaa	gtt	cta	ttt	240	
Phe	Glu	Gln	Ile	Glu	Lys	Cys	Cys	Lys	Arg	Asn	Asp	Glu	Val	Leu	Phe		
65					70				75					80			
agg	ttg	gaa	aat	cac	gct	gaa	act	cta	aga	gcg	gct	atg	ata	tct	ctg	288	
Arg	Leu	Glu	Asn	His	Ala	Glu	Thr	Leu	Arg	Ala	Ala	Met	Ile	Ser	Leu		
				85				90					95				
gct	aaa	aag	att	gat	gtt	cag	act	gga	cgg	cgt	cca	tat	gag			330	
Ala	Lys	Lys	Ile	Asp	Val	Gln	Thr	Gly	Arg	Arg	Pro	Tyr	Glu				
			100					105					110				

<210> 318
 <211> 110
 <212> PRT
 <213> vaccinia virus

Met	Asp	Gly	Thr	Leu	Phe	Pro	Gly	Asp	Asp	Asp	Leu	Ala	Ile	Pro	Ala		
1				5					10					15			
Thr	Glu	Phe	Phe	Ser	Thr	Lys	Ala	Ala	Lys	Lys	Pro	Glu	Ala	Lys	Arg		
			20					25					30				
Glu	Ala	Ile	Val	Lys	Ala	Asp	Glu	Asp	Asp	Asn	Glu	Glu	Thr	Leu	Lys		
		35				40					45						
Gln	Arg	Leu	Thr	Asn	Leu	Glu	Lys	Lys	Ile	Thr	Asn	Val	Thr	Thr	Lys		
50					55				60								
Phe	Glu	Gln	Ile	Glu	Lys	Cys	Cys	Lys	Arg	Asn	Asp	Glu	Val	Leu	Phe		
65					70				75					80			
Arg	Leu	Glu	Asn	His	Ala	Glu	Thr	Leu	Arg	Ala	Ala	Met	Ile	Ser	Leu		
				85				90					95				
Ala	Lys	Lys	Ile	Asp	Val	Gln	Thr	Gly	Arg	Arg	Pro	Tyr	Glu				
			100					105					110				

<210> 319
 <211> 441
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(441)

<400> 319
atg aac tct cta tca att ttt ttt att gtg gta gcg acg gct gcg gtg 48
Met Asn Ser Leu Ser Ile Phe Phe Ile Val Val Ala Thr Ala Ala Val
1 5 10 15
tgt tta ctt ttt atc cag ggt tac tca ata tat gaa aat tat ggc aat 96
Cys Leu Leu Phe Ile Gln Gly Tyr Ser Ile Tyr Glu Asn Tyr Gly Asn
20 25 30
att aag gaa ttt aat gct act cat gca gca ttc gaa tat tca aaa tct 144
Ile Lys Glu Phe Asn Ala Thr His Ala Ala Phe Glu Tyr Ser Lys Ser
35 40 45
ata ggt gga aca ccg gca tta gat agg aga gtt caa gat gtc aac gac 192
Ile Gly Gly Thr Pro Ala Leu Asp Arg Arg Val Gln Asp Val Asn Asp
50 55 60
aca att tct gat gta aag caa aag tgg aga tgt gtg gtt tat cca gga 240
Thr Ile Ser Asp Val Lys Gln Lys Trp Arg Cys Val Val Tyr Pro Gly
65 70 75 80
aac ggt ttt gta tcc gct tcc ata ttt gga ttt cag gca gaa gtt gga 288
Asn Gly Phe Val Ser Ala Ser Ile Phe Gly Phe Gln Ala Glu Val Gly
85 90 95
ccc aat aat act aga tcc att aga aaa ttt aac acg atg caa caa tgt 336
Pro Asn Asn Thr Arg Ser Ile Arg Lys Phe Asn Thr Met Gln Gln Cys
100 105 110
ata gac ttt aca ttt tct gat gtt att aac atc gat att tat aat cca 384
Ile Asp Phe Thr Phe Ser Asp Val Ile Asn Ile Asp Ile Tyr Asn Pro
115 120 125
tgt gtt gta cca aat ata aat aac gca gag tgt cag ttt cta aaa tct 432
Cys Val Val Pro Asn Ile Asn Asn Ala Glu Cys Gln Phe Leu Lys Ser
130 135 140
gta ctt taa 441
Val Leu *
145

<210> 320
<211> 146
<212> PRT
<213> vaccinia virus

<400> 320
Met Asn Ser Leu Ser Ile Phe Phe Ile Val Val Ala Thr Ala Ala Val
1 5 10 15
Cys Leu Leu Phe Ile Gln Gly Tyr Ser Ile Tyr Glu Asn Tyr Gly Asn
20 25 30
Ile Lys Glu Phe Asn Ala Thr His Ala Ala Phe Glu Tyr Ser Lys Ser
35 40 45
Ile Gly Gly Thr Pro Ala Leu Asp Arg Arg Val Gln Asp Val Asn Asp
50 55 60
Thr Ile Ser Asp Val Lys Gln Lys Trp Arg Cys Val Val Tyr Pro Gly
65 70 75 80
Asn Gly Phe Val Ser Ala Ser Ile Phe Gly Phe Gln Ala Glu Val Gly

				85					90					95			
Pro	Asn	Asn	Thr	Arg	Ser	Ile	Arg	Lys	Phe	Asn	Thr	Met	Gln	Gln	Cys		
			100					105					110				
Ile	Asp	Phe	Thr	Phe	Ser	Asp	Val	Ile	Asn	Ile	Asp	Ile	Tyr	Asn	Pro		
		115					120					125					
Cys	Val	Val	Pro	Asn	Ile	Asn	Asn	Ala	Glu	Cys	Gln	Phe	Leu	Lys	Ser		
	130					135					140						
Val	Leu																
145																	

<210> 321
 <211> 915
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(915)

<400> 321																
atg	cag	cat	ccg	cgg	gaa	gag	aat	tca	atc	gtc	ggt	gaa	ctc	gaa	ccc	48
Met	Gln	His	Pro	Arg	Glu	Glu	Asn	Ser	Ile	Val	Val	Glu	Leu	Glu	Pro	
1				5					10					15		
tca	ttg	gct	aca	ttt	atc	aaa	caa	gga	ttt	aat	aat	ctc	gta	aaa	tg	96
Ser	Leu	Ala	Thr	Phe	Ile	Lys	Gln	Gly	Phe	Asn	Asn	Leu	Val	Lys	Trp	
			20					25					30			
ccc	ttg	tta	aac	att	gga	ata	gtt	ttg	tct	aat	aca	tct	acc	gct	gtc	144
Pro	Leu	Leu	Asn	Ile	Gly	Ile	Val	Leu	Ser	Asn	Thr	Ser	Thr	Ala	Val	
			35				40					45				
aat	gag	gaa	tg	ata	act	gcg	gta	gag	cat	att	ccc	acc	atg	aag	ata	192
Asn	Glu	Glu	Trp	Ile	Thr	Ala	Val	Glu	His	Ile	Pro	Thr	Met	Lys	Ile	
	50					55					60					
ttt	tac	aaa	cat	ata	cat	aag	ata	ctt	act	aga	gaa	atg	ggg	ttt	tta	240
Phe	Tyr	Lys	His	Ile	His	Lys	Ile	Leu	Thr	Arg	Glu	Met	Gly	Phe	Leu	
65					70					75					80	
gtc	tat	ttg	aaa	aga	tcc	caa	tct	gaa	cgc	gat	aat	tat	ata	act	tta	288
Val	Tyr	Leu	Lys	Arg	Ser	Gln	Ser	Glu	Arg	Asp	Asn	Tyr	Ile	Thr	Leu	
				85					90					95		
tac	gat	ttt	gat	tat	tat	att	ata	gat	aag	gat	aca	aat	tct	gta	act	336
Tyr	Asp	Phe	Asp	Tyr	Tyr	Ile	Ile	Asp	Lys	Asp	Thr	Asn	Ser	Val	Thr	
			100					105					110			
atg	gta	gat	aaa	ccg	acc	gag	tta	aag	gaa	act	ttg	tta	cat	gta	ttt	384
Met	Val	Asp	Lys	Pro	Thr	Glu	Leu	Lys	Glu	Thr	Leu	Leu	His	Val	Phe	
		115					120					125				
caa	gaa	tat	cgt	tta	aag	agt	tct	caa	aca	ata	gag	ctt	ata	gcg	ttt	432
Gln	Glu	Tyr	Arg	Leu	Lys	Ser	Ser	Gln	Thr	Ile	Glu	Leu	Ile	Ala	Phe	
	130					135					140					
agt	tca	ggt	acg	gta	ata	aac	gaa	gac	ata	ggt	tca	aaa	tta	aca	ttt	480
Ser	Ser	Gly	Thr	Val	Ile	Asn	Glu	Asp	Ile	Val	Ser	Lys	Leu	Thr	Phe	

145	150	155	160	
tta gat gtg gag gta ttt aat aga gaa tat aat aat gtt aaa act atc	528			
Leu Asp Val Glu Val Phe Asn Arg Glu Tyr Asn Asn Val Lys Thr Ile				
165 170 175				
ata gat ccg gat ttt gta tct aga tct cca ttt ata gtt atc tct cct	576			
Ile Asp Pro Asp Phe Val Ser Arg Ser Pro Phe Ile Val Ile Ser Pro				
180 185 190				
atg ggt aaa cta act ttc ttc gta gaa gta tat tcg tgg ttt gat ttt	624			
Met Gly Lys Leu Thr Phe Phe Val Glu Val Tyr Ser Trp Phe Asp Phe				
195 200 205				
aaa tcg tgt ttc aaa gat att ata gat ttc tta gaa ggt gct cta ata	672			
Lys Ser Cys Phe Lys Asp Ile Ile Asp Phe Leu Glu Gly Ala Leu Ile				
210 215 220				
gcc aat att cat aat cac atg att aag gta ggt aat tgt gac gaa aca	720			
Ala Asn Ile His Asn His Met Ile Lys Val Gly Asn Cys Asp Glu Thr				
225 230 235 240				
gta tcg tct tat aat cca gag tct gga atg ttg ttt gtt aat gac tta	768			
Val Ser Ser Tyr Asn Pro Glu Ser Gly Met Leu Phe Val Asn Asp Leu				
245 250 255				
atg act atg aac ata gtc aac ttt ttc gga tgt aat tct agg tta gaa	816			
Met Thr Met Asn Ile Val Asn Phe Phe Gly Cys Asn Ser Arg Leu Glu				
260 265 270				
tca tac cat cgg ttc gat atg aca aaa gta gat gtt gaa cta ttt att	864			
Ser Tyr His Arg Phe Asp Met Thr Lys Val Asp Val Glu Leu Phe Ile				
275 280 285				
aaa gca ttg tct gat gcg tgt aaa aaa att ttg tca gct tct aat aga	912			
Lys Ala Leu Ser Asp Ala Cys Lys Lys Ile Leu Ser Ala Ser Asn Arg				
290 295 300				
tta	915			
Leu				
305				

<210> 322

<211> 305

<212> PRT

<213> vaccinia virus

<400> 322

Met Gln His Pro Arg Glu Glu Asn Ser Ile Val Val Glu Leu Glu Pro	
1 5 10 15	
Ser Leu Ala Thr Phe Ile Lys Gln Gly Phe Asn Asn Leu Val Lys Trp	
20 25 30	
Pro Leu Leu Asn Ile Gly Ile Val Leu Ser Asn Thr Ser Thr Ala Val	
35 40 45	
Asn Glu Glu Trp Ile Thr Ala Val Glu His Ile Pro Thr Met Lys Ile	
50 55 60	
Phe Tyr Lys His Ile His Lys Ile Leu Thr Arg Glu Met Gly Phe Leu	
65 70 75 80	

Val Tyr Leu Lys Arg Ser Gln Ser Glu Arg Asp Asn Tyr Ile Thr Leu
 85 90 95
 Tyr Asp Phe Asp Tyr Tyr Ile Ile Asp Lys Asp Thr Asn Ser Val Thr
 100 105 110
 Met Val Asp Lys Pro Thr Glu Leu Lys Glu Thr Leu Leu His Val Phe
 115 120 125
 Gln Glu Tyr Arg Leu Lys Ser Ser Gln Thr Ile Glu Leu Ile Ala Phe
 130 135 140
 Ser Ser Gly Thr Val Ile Asn Glu Asp Ile Val Ser Lys Leu Thr Phe
 145 150 155 160
 Leu Asp Val Glu Val Phe Asn Arg Glu Tyr Asn Asn Val Lys Thr Ile
 165 170 175
 Ile Asp Pro Asp Phe Val Ser Arg Ser Pro Phe Ile Val Ile Ser Pro
 180 185 190
 Met Gly Lys Leu Thr Phe Phe Val Glu Val Tyr Ser Trp Phe Asp Phe
 195 200 205
 Lys Ser Cys Phe Lys Asp Ile Ile Asp Phe Leu Glu Gly Ala Leu Ile
 210 215 220
 Ala Asn Ile His Asn His Met Ile Lys Val Gly Asn Cys Asp Glu Thr
 225 230 235 240
 Val Ser Ser Tyr Asn Pro Glu Ser Gly Met Leu Phe Val Asn Asp Leu
 245 250 255
 Met Thr Met Asn Ile Val Asn Phe Phe Gly Cys Asn Ser Arg Leu Glu
 260 265 270
 Ser Tyr His Arg Phe Asp Met Thr Lys Val Asp Val Glu Leu Phe Ile
 275 280 285
 Lys Ala Leu Ser Asp Ala Cys Lys Lys Ile Leu Ser Ala Ser Asn Arg
 290 295 300
 Leu
 305

<210> 323
 <211> 234
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(234)

<400> 323
 atg gaa gac ctt aac gag gca aac ttc tca cat tta ttg ata aat tta 48
 Met Glu Asp Leu Asn Glu Ala Asn Phe Ser His Leu Leu Ile Asn Leu
 1 5 10 15

 tct aat aat aaa gat atc gat gcg caa tac gcg tct aca tta tcc gtg 96
 Ser Asn Asn Lys Asp Ile Asp Ala Gln Tyr Ala Ser Thr Leu Ser Val
 20 25 30

 gta cat gaa ttg cta tcc gct ata aat ttt aaa ata ttt aat ata aac 144
 Val His Glu Leu Leu Ser Ala Ile Asn Phe Lys Ile Phe Asn Ile Asn
 35 40 45

 aaa aag tcg aaa aag aat tcc aaa tca atc gaa caa cat ccc gtc gtt 192
 Lys Lys Ser Lys Lys Asn Ser Lys Ser Ile Glu Gln His Pro Val Val
 50 55 60

 cat cat gca gca tcc gcg gga aga gaa ttc aat cgt cgt tga 234

His His Ala Ala Ser Ala Gly Arg Glu Phe Asn Arg Arg *
65 70 75

<210> 324
<211> 77
<212> PRT
<213> vaccinia virus

<400> 324
Met Glu Asp Leu Asn Glu Ala Asn Phe Ser His Leu Leu Ile Asn Leu
1 5 10 15
Ser Asn Asn Lys Asp Ile Asp Ala Gln Tyr Ala Ser Thr Leu Ser Val
20 25 30
Val His Glu Leu Leu Ser Ala Ile Asn Phe Lys Ile Phe Asn Ile Asn
35 40 45
Lys Lys Ser Lys Lys Asn Ser Lys Ser Ile Glu Gln His Pro Val Val
50 55 60
His His Ala Ala Ser Ala Gly Arg Glu Phe Asn Arg Arg
65 70 75

<210> 325
<211> 375
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(375)

<400> 325
atg gca tct att tta aat acà ctt agg ttt ttg gaa aaa aca tca ttt 48
Met Ala Ser Ile Leu Asn Thr Leu Arg Phe Leu Glu Lys Thr Ser Phe
1 5 10 15
tat aat tgt aac gat tca ata act aaa gaa aag att aag att aaa cat 96
Tyr Asn Cys Asn Asp Ser Ile Thr Lys Glu Lys Ile Lys Ile Lys His
20 25 30
aag gga atg tca ttt gta ttt tat aag cca aag cat tct acc gtt gtt 144
Lys Gly Met Ser Phe Val Phe Tyr Lys Pro Lys His Ser Thr Val Val
35 40 45
aaa tac ttg tct gga gga ggt ata tat cat gat gat ttg gtt gta ttg 192
Lys Tyr Leu Ser Gly Gly Gly Ile Tyr His Asp Asp Leu Val Val Leu
50 55 60
ggg aag gta aca att aat gat cta aag atg atg cta ttt tac atg gat 240
Gly Lys Val Thr Ile Asn Asp Leu Lys Met Met Leu Phe Tyr Met Asp
65 70 75 80
tta tca tat cat gga gtg aca agt agt gga gca att tac aaa ttg gga 288
Leu Ser Tyr His Gly Val Thr Ser Ser Gly Ala Ile Tyr Lys Leu Gly
85 90 95
tcg tct atc gat aga ctt tct cta aat agg act att gtt aca aaa gtt 336
Ser Ser Ile Asp Arg Leu Ser Leu Asn Arg Thr Ile Val Thr Lys Val

100	105	110	
aat aat tat gat gat aca ttt ttt gac gac gat gat tga			375
Asn Asn Tyr Asp Asp Thr Phe Phe Asp Asp Asp Asp *			
115	120		

<210> 326
 <211> 124
 <212> PRT
 <213> vaccinia virus

<400> 326

Met	Ala	Ser	Ile	Leu	Asn	Thr	Leu	Arg	Phe	Leu	Glu	Lys	Thr	Ser	Phe
1				5					10					15	
Tyr	Asn	Cys	Asn	Asp	Ser	Ile	Thr	Lys	Glu	Lys	Ile	Lys	Ile	Lys	His
	20							25					30		
Lys	Gly	Met	Ser	Phe	Val	Phe	Tyr	Lys	Pro	Lys	His	Ser	Thr	Val	Val
	35						40					45			
Lys	Tyr	Leu	Ser	Gly	Gly	Gly	Ile	Tyr	His	Asp	Asp	Leu	Val	Val	Leu
	50					55					60				
Gly	Lys	Val	Thr	Ile	Asn	Asp	Leu	Lys	Met	Met	Leu	Phe	Tyr	Met	Asp
65					70				75					80	
Leu	Ser	Tyr	His	Gly	Val	Thr	Ser	Ser	Gly	Ala	Ile	Tyr	Lys	Leu	Gly
			85					90					95		
Ser	Ser	Ile	Asp	Arg	Leu	Ser	Leu	Asn	Arg	Thr	Ile	Val	Thr	Lys	Val
			100					105					110		
Asn	Asn	Tyr	Asp	Asp	Thr	Phe	Phe	Asp	Asp	Asp	Asp				
		115					120								

<210> 327
 <211> 810
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(810)

<400> 327

atg	aat	tgt	ttc	caa	gaa	aaa	caa	ttt	tca	aga	gaa	aat	tta	tta	aaa	48
Met	Asn	Cys	Phe	Gln	Glu	Lys	Gln	Phe	Ser	Arg	Glu	Asn	Leu	Leu	Lys	
1				5					10					15		
atg	ccg	ttt	aga	atg	gtt	tta	acg	gga	gga	tct	gga	tct	gga	aaa	act	96
Met	Pro	Phe	Arg	Met	Val	Leu	Thr	Gly	Gly	Ser	Gly	Ser	Gly	Lys	Thr	
			20					25					30			
atc	tat	tta	cta	tct	ctg	ttt	tct	aca	cta	gtt	aaa	aaa	tat	aaa	cat	144
Ile	Tyr	Leu	Leu	Ser	Leu	Phe	Ser	Thr	Leu	Val	Lys	Lys	Tyr	Lys	His	
		35					40					45				
ata	ttc	ttg	ttt	aca	ccc	gtt	tat	aac	cca	gat	tat	gat	gga	tac	att	192
Ile	Phe	Leu	Phe	Thr	Pro	Val	Tyr	Asn	Pro	Asp	Tyr	Asp	Gly	Tyr	Ile	
		50				55					60					
tgg	cca	aat	cat	att	aat	ttc	gtt	agt	agt	cag	gaa	gct	cta	gaa	tat	240
Trp	Pro	Asn	His	Ile	Asn	Phe	Val	Ser	Ser	Gln	Glu	Ala	Leu	Glu	Tyr	

65	70	75	80	
aat ctg ata cga act	aaa agt aac ata	gaa aaa tgt att gct gtc gca	288	
Asn Leu Ile Arg Thr	Lys Ser Asn Ile	Glu Lys Cys Ile Ala Val Ala		
	85	90	95	
caa aat cat aaa aaa tca gca cac ttt tta ctt att ttt gat gat gta	336			
Gln Asn His Lys Lys Ser Ala His Phe Leu Leu Ile Phe Asp Asp Val				
	100	105	110	
ggc gat aaa cta tca aaa tgc aat act cta ata gaa ttc tta aac ttt	384			
Gly Asp Lys Leu Ser Lys Cys Asn Thr Leu Ile Glu Phe Leu Asn Phe				
	115	120	125	
gga agg cat tta aac acg tct att att cta cta tgc caa act tat aga	432			
Gly Arg His Leu Asn Thr Ser Ile Ile Leu Leu Cys Gln Thr Tyr Arg				
	130	135	140	
cac gta cca ata tta gga cgg gct aac att acg cat ttt tgt agt ttt	480			
His Val Pro Ile Leu Gly Arg Ala Asn Ile Thr His Phe Cys Ser Phe				
	145	150	155	
aac att tcc atc tca gac gcg gaa aat atg cta cga tcg atg cct gta	528			
Asn Ile Ser Ile Ser Asp Ala Glu Asn Met Leu Arg Ser Met Pro Val				
	165	170	175	
aag ggg aaa cga aag gat ata tta aac atg ttg aat atg ata cag aca	576			
Lys Gly Lys Arg Lys Asp Ile Leu Asn Met Leu Asn Met Ile Gln Thr				
	180	185	190	
gct aga tcc aat aat cga ttg gct att att atc gaa gac tcc gta ttt	624			
Ala Arg Ser Asn Asn Arg Leu Ala Ile Ile Ile Glu Asp Ser Val Phe				
	195	200	205	
tgt gaa ggt gaa tta cgt ata tgt acc gat acc gcc gat aag gac gtt	672			
Cys Glu Gly Glu Leu Arg Ile Cys Thr Asp Thr Ala Asp Lys Asp Val				
	210	215	220	
ata gaa caa aag tta aac ata gat att tta gta aat caa tat tct cat	720			
Ile Glu Gln Lys Leu Asn Ile Asp Ile Leu Val Asn Gln Tyr Ser His				
	225	230	235	
atg aaa aag aac cta aac act ata tta gaa agt aca aaa aca aaa ttg	768			
Met Lys Lys Asn Leu Asn Thr Ile Leu Glu Ser Thr Lys Thr Lys Leu				
	245	250	255	
tgc aat agc gat caa tca tcg tcg tca aaa aat gta tca tca	810			
Cys Asn Ser Asp Gln Ser Ser Ser Ser Lys Asn Val Ser Ser				
	260	265	270	

<210> 328
 <211> 270
 <212> PRT
 <213> vaccinia virus

<400> 328
 Met Asn Cys Phe Gln Glu Lys Gln Phe Ser Arg Glu Asn Leu Leu Lys

1	Met	Pro	Phe	Arg	Met	Val	Leu	Thr	Gly	Gly	Ser	Gly	Ser	Gly	Lys	Thr
			20						25					30		
	Ile	Tyr	Leu	Leu	Ser	Leu	Phe	Ser	Thr	Leu	Val	Lys	Lys	Tyr	Lys	His
		35						40					45			
	Ile	Phe	Leu	Phe	Thr	Pro	Val	Tyr	Asn	Pro	Asp	Tyr	Asp	Gly	Tyr	Ile
		50					55					60				
	Trp	Pro	Asn	His	Ile	Asn	Phe	Val	Ser	Ser	Gln	Glu	Ala	Leu	Glu	Tyr
	65					70					75					80
	Asn	Leu	Ile	Arg	Thr	Lys	Ser	Asn	Ile	Glu	Lys	Cys	Ile	Ala	Val	Ala
				85						90					95	
	Gln	Asn	His	Lys	Lys	Ser	Ala	His	Phe	Leu	Leu	Ile	Phe	Asp	Asp	Val
			100						105					110		
	Gly	Asp	Lys	Leu	Ser	Lys	Cys	Asn	Thr	Leu	Ile	Glu	Phe	Leu	Asn	Phe
		115						120					125			
	Gly	Arg	His	Leu	Asn	Thr	Ser	Ile	Ile	Leu	Leu	Cys	Gln	Thr	Tyr	Arg
		130				135						140				
	His	Val	Pro	Ile	Leu	Gly	Arg	Ala	Asn	Ile	Thr	His	Phe	Cys	Ser	Phe
	145					150					155					160
	Asn	Ile	Ser	Ile	Ser	Asp	Ala	Glu	Asn	Met	Leu	Arg	Ser	Met	Pro	Val
				165					170						175	
	Lys	Gly	Lys	Arg	Lys	Asp	Ile	Leu	Asn	Met	Leu	Asn	Met	Ile	Gln	Thr
			180						185					190		
	Ala	Arg	Ser	Asn	Asn	Arg	Leu	Ala	Ile	Ile	Ile	Glu	Asp	Ser	Val	Phe
		195						200					205			
	Cys	Glu	Gly	Glu	Leu	Arg	Ile	Cys	Thr	Asp	Thr	Ala	Asp	Lys	Asp	Val
		210					215					220				
	Ile	Glu	Gln	Lys	Leu	Asn	Ile	Asp	Ile	Leu	Val	Asn	Gln	Tyr	Ser	His
	225					230					235					240
	Met	Lys	Lys	Asn	Leu	Asn	Thr	Ile	Leu	Glu	Ser	Thr	Lys	Thr	Lys	Leu
				245						250					255	
	Cys	Asn	Ser	Asp	Gln	Ser	Ser	Ser	Ser	Lys	Asn	Val	Ser	Ser		
			260						265					270		

<210> 329
 <211> 558
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(558)

<400> 329	
atg atg aca cca gaa aac gac gaa gag cag aca tct gtg ttc tcc gct	48
Met Met Thr Pro Glu Asn Asp Glu Glu Gln Thr Ser Val Phe Ser Ala	
1 5 10 15	
act gtt tac gga gac aaa att cag gga aag aat aaa cgc aaa cgc gtg	96
Thr Val Tyr Gly Asp Lys Ile Gln Gly Lys Asn Lys Arg Lys Arg Val	
20 25 30	
att ggt cta tgt att aga ata tct atg gtt att tca cta cta tct atg	144
Ile Gly Leu Cys Ile Arg Ile Ser Met Val Ile Ser Leu Leu Ser Met	
35 40 45	
att acc atg tcc gcg ttt ctc ata gtg cgc cta aat caa tgc atg tct	192
Ile Thr Met Ser Ala Phe Leu Ile Val Arg Leu Asn Gln Cys Met Ser	

50	55	60	
gct aac gag gct gct att act gac gcc gct gtt gcc gtt gct gct gca			240
Ala Asn Glu Ala Ala Ile Thr Asp Ala Ala Val Ala Val Ala Ala Ala			
65	70	75	80
tca tct act cat aga aag gtt gcg tct agc act aca caa tat gat cac			288
Ser Ser Thr His Arg Lys Val Ala Ser Ser Thr Thr Gln Tyr Asp His			
	85	90	95
aaa gaa agc tgt aat ggt tta tat tac cag ggt tct tgt tat ata tta			336
Lys Glu Ser Cys Asn Gly Leu Tyr Tyr Gln Gly Ser Cys Tyr Ile Leu			
	100	105	110
cat tca gac tac cag tta ttc tcg gat gct aaa gca aat tgc act gcg			384
His Ser Asp Tyr Gln Leu Phe Ser Asp Ala Lys Ala Asn Cys Thr Ala			
	115	120	125
gaa tca tca aca cta ccc aat aaa tcc gat gtc ttg att acc tgg ctc			432
Glu Ser Ser Thr Leu Pro Asn Lys Ser Asp Val Leu Ile Thr Trp Leu			
	130	135	140
att gat tat gtt gag gat aca tgg gga tct gat ggt aat cca att aca			480
Ile Asp Tyr Val Glu Asp Thr Trp Gly Ser Asp Gly Asn Pro Ile Thr			
	145	150	155
aaa act aca tcc gat tat caa gat tct gat gta tca caa gaa gtt aga			528
Lys Thr Thr Ser Asp Tyr Gln Asp Ser Asp Val Ser Gln Glu Val Arg			
	165	170	175
aag tat ttt tgt gtt aaa aca atg aac taa			558
Lys Tyr Phe Cys Val Lys Thr Met Asn *			
	180	185	

<210> 330
 <211> 185
 <212> PRT
 <213> vaccinia virus

<400> 330	
Met Met Thr Pro Glu Asn Asp Glu Glu Gln Thr Ser Val Phe Ser Ala	
1	5 10 15
Thr Val Tyr Gly Asp Lys Ile Gln Gly Lys Asn Lys Arg Lys Arg Val	
	20 25 30
Ile Gly Leu Cys Ile Arg Ile Ser Met Val Ile Ser Leu Leu Ser Met	
	35 40 45
Ile Thr Met Ser Ala Phe Leu Ile Val Arg Leu Asn Gln Cys Met Ser	
	50 55 60
Ala Asn Glu Ala Ala Ile Thr Asp Ala Ala Val Ala Val Ala Ala Ala	
65	70 75 80
Ser Ser Thr His Arg Lys Val Ala Ser Ser Thr Thr Gln Tyr Asp His	
	85 90 95
Lys Glu Ser Cys Asn Gly Leu Tyr Tyr Gln Gly Ser Cys Tyr Ile Leu	
	100 105 110
His Ser Asp Tyr Gln Leu Phe Ser Asp Ala Lys Ala Asn Cys Thr Ala	
	115 120 125
Glu Ser Ser Thr Leu Pro Asn Lys Ser Asp Val Leu Ile Thr Trp Leu	
	130 135 140

Ile Asp Tyr Val Glu Asp Thr Trp Gly Ser Asp Gly Asn Pro Ile Thr
 145 150 155 160
 Lys Thr Thr Ser Asp Tyr Gln Asp Ser Asp Val Ser Gln Glu Val Arg
 165 170 175
 Lys Tyr Phe Cys Val Lys Thr Met Asn
 180 185

<210> 331
 <211> 507
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(507)

<400> 331
 atg aaa tcg ctt aat aga caa act gta agt agg ttt aag aag ttg tcg 48
 Met Lys Ser Leu Asn Arg Gln Thr Val Ser Arg Phe Lys Lys Leu Ser
 1 5 10 15
 gtg ccg gcc gct ata atg atg ata ctc tca acc att att agt ggc ata 96
 Val Pro Ala Ala Ile Met Met Ile Leu Ser Thr Ile Ile Ser Gly Ile
 20 25 30
 gga aca ttt ctg cat tac aaa gaa gaa ctg atg cct agt gct tgc gcc 144
 Gly Thr Phe Leu His Tyr Lys Glu Glu Leu Met Pro Ser Ala Cys Ala
 35 40 45
 aat gga tgg ata caa tac gat aaa cat tgt tat tta gat act aac att 192
 Asn Gly Trp Ile Gln Tyr Asp Lys His Cys Tyr Leu Asp Thr Asn Ile
 50 55 60
 aaa atg tct aca gat aat gcg gtt tat cag tgt cgt aaa tta cga gcc 240
 Lys Met Ser Thr Asp Asn Ala Val Tyr Gln Cys Arg Lys Leu Arg Ala
 65 70 75 80
 aga ttg cct aga ccg gat act aga cat ctg aga gta ttg ttt agt att 288
 Arg Leu Pro Arg Pro Asp Thr Arg His Leu Arg Val Leu Phe Ser Ile
 85 90 95
 ttt tat aaa gat tat tgg gta agt tta aaa aag acc aat aat aaa tgg 336
 Phe Tyr Lys Asp Tyr Trp Val Ser Leu Lys Lys Thr Asn Asn Lys Trp
 100 105 110
 tta gat att aat aat gat aaa gat ata gat att agt aaa tta aca aat 384
 Leu Asp Ile Asn Asn Asp Lys Asp Ile Asp Ile Ser Lys Leu Thr Asn
 115 120 125
 ttt aaa caa cta aac agt acg acg gat gct gaa gcg tgt tat ata tac 432
 Phe Lys Gln Leu Asn Ser Thr Thr Asp Ala Glu Ala Cys Tyr Ile Tyr
 130 135 140
 aag tct gga aaa ctg gtt aaa aca gta tgt aaa agt act caa tct gta 480
 Lys Ser Gly Lys Leu Val Lys Thr Val Cys Lys Ser Thr Gln Ser Val
 145 150 155 160
 cta tgt gtt aaa aaa ttc tac aag tga 507

Leu Cys Val Lys Lys Phe Tyr Lys *
165

<210> 332
<211> 168
<212> PRT
<213> vaccinia virus

<400> 332
Met Lys Ser Leu Asn Arg Gln Thr Val Ser Arg Phe Lys Lys Leu Ser
1 5 10 15
Val Pro Ala Ala Ile Met Met Ile Leu Ser Thr Ile Ile Ser Gly Ile
20 25 30
Gly Thr Phe Leu His Tyr Lys Glu Glu Leu Met Pro Ser Ala Cys Ala
35 40 45
Asn Gly Trp Ile Gln Tyr Asp Lys His Cys Tyr Leu Asp Thr Asn Ile
50 55 60
Lys Met Ser Thr Asp Asn Ala Val Tyr Gln Cys Arg Lys Leu Arg Ala
65 70 75 80
Arg Leu Pro Arg Pro Asp Thr Arg His Leu Arg Val Leu Phe Ser Ile
85 90 95
Phe Tyr Lys Asp Tyr Trp Val Ser Leu Lys Lys Thr Asn Asn Lys Trp
100 105 110
Leu Asp Ile Asn Asn Asp Lys Asp Ile Asp Ile Ser Lys Leu Thr Asn
115 120 125
Phe Lys Gln Leu Asn Ser Thr Thr Asp Ala Glu Ala Cys Tyr Ile Tyr
130 135 140
Lys Ser Gly Lys Leu Val Lys Thr Val Cys Lys Ser Thr Gln Ser Val
145 150 155 160
Leu Cys Val Lys Lys Phe Tyr Lys
165

<210> 333
<211> 531
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(531)

<400> 333
atg gac gcc gcg ttt gtt att act cca atg ggt gtg ttg act ata aca 48
Met Asp Ala Ala Phe Val Ile Thr Pro Met Gly Val Leu Thr Ile Thr
1 5 10 15
gat aca ttg tat gat gat ctc gat atc tca atc atg gac ttt ata gga 96
Asp Thr Leu Tyr Asp Asp Leu Asp Ile Ser Ile Met Asp Phe Ile Gly
20 25 30
cca tac att ata ggt aac ata aaa act gtc caa ata gat gta cgg gat 144
Pro Tyr Ile Ile Gly Asn Ile Lys Thr Val Gln Ile Asp Val Arg Asp
35 40 45
ata aaa tat tcc gac atg caa aaa tgc tac ttt agc tat aag ggt aaa 192
Ile Lys Tyr Ser Asp Met Gln Lys Cys Tyr Phe Ser Tyr Lys Gly Lys
50 55 60

ata gtt cct cag gat tct aat gat ttg gct aga ttc aac att tat agc	240
Ile Val Pro Gln Asp Ser Asn Asp Leu Ala Arg Phe Asn Ile Tyr Ser	
65 70 75 80	
att tgt gcc gca tac aga tca aaa aat acc atc atc ata gca tgc gac	288
Ile Cys Ala Ala Tyr Arg Ser Lys Asn Thr Ile Ile Ile Ala Cys Asp	
85 90 95	
tat gat atc atg tta gat ata gaa gat aaa cat cag cca ttt tat cta	336
Tyr Asp Ile Met Leu Asp Ile Glu Asp Lys His Gln Pro Phe Tyr Leu	
100 105 110	
ttc cca tct att gat gtt ttt aac gct aca atc ata gaa gcg tat aac	384
Phe Pro Ser Ile Asp Val Phe Asn Ala Thr Ile Ile Glu Ala Tyr Asn	
115 120 125	
ctg tat aca gct gga gat tat cat cta atc atc aat cct tca gat aat	432
Leu Tyr Thr Ala Gly Asp Tyr His Leu Ile Ile Asn Pro Ser Asp Asn	
130 135 140	
ctg aaa atg aaa ttg tcg ttt aat tct tca ttc tgc ata tca gac ggc	480
Leu Lys Met Lys Leu Ser Phe Asn Ser Ser Phe Cys Ile Ser Asp Gly	
145 150 155 160	
aat gga tgg att ata att gat ggg aaa tgc aat agt aat ttt tta tca	528
Asn Gly Trp Ile Ile Ile Asp Gly Lys Cys Asn Ser Asn Phe Leu Ser	
165 170 175	
taa	531
*	

<210> 334
 <211> 176
 <212> PRT
 <213> vaccinia virus

<400> 334
 Met Asp Ala Ala Phe Val Ile Thr Pro Met Gly Val Leu Thr Ile Thr
 1 5 10 15
 Asp Thr Leu Tyr Asp Asp Leu Asp Ile Ser Ile Met Asp Phe Ile Gly
 20 25 30
 Pro Tyr Ile Ile Gly Asn Ile Lys Thr Val Gln Ile Asp Val Arg Asp
 35 40 45
 Ile Lys Tyr Ser Asp Met Gln Lys Cys Tyr Phe Ser Tyr Lys Gly Lys
 50 55 60
 Ile Val Pro Gln Asp Ser Asn Asp Leu Ala Arg Phe Asn Ile Tyr Ser
 65 70 75 80
 Ile Cys Ala Ala Tyr Arg Ser Lys Asn Thr Ile Ile Ile Ala Cys Asp
 85 90 95
 Tyr Asp Ile Met Leu Asp Ile Glu Asp Lys His Gln Pro Phe Tyr Leu
 100 105 110
 Phe Pro Ser Ile Asp Val Phe Asn Ala Thr Ile Ile Glu Ala Tyr Asn
 115 120 125
 Leu Tyr Thr Ala Gly Asp Tyr His Leu Ile Ile Asn Pro Ser Asp Asn
 130 135 140
 Leu Lys Met Lys Leu Ser Phe Asn Ser Ser Phe Cys Ile Ser Asp Gly

145		150		155		160
Asn Gly Trp Ile Ile Ile Asp Gly Lys Cys Asn Ser Asn Phe Leu Ser						
	165		170			175

<210> 335
 <211> 666
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(666)

<400> 335	
atg atg ctg gta cct ctt atc acg gtg acc gta gtt gcg gga aca ata	48
Met Met Leu Val Pro Leu Ile Thr Val Thr Val Val Ala Gly Thr Ile	
1 5 10 15	
tta gta tgt tat ata tta tat att tgt agg aaa aag ata cgt act gtc	96
Leu Val Cys Tyr Ile Leu Tyr Ile Cys Arg Lys Lys Ile Arg Thr Val	
20 25 30	
tat aat gac aat aaa att atc atg aca aaa tta aaa aag ata aag agt	144
Tyr Asn Asp Asn Lys Ile Ile Met Thr Lys Leu Lys Lys Ile Lys Ser	
35 40 45	
tct aat tcc agc aaa tct agt aaa tca act gat agc gaa tca gac tgg	192
Ser Asn Ser Ser Lys Ser Ser Lys Ser Thr Asp Ser Glu Ser Asp Trp	
50 55 60	
gag gat cac tgt agt gct atg gaa caa aac aat gac gta gat aat att	240
Glu Asp His Cys Ser Ala Met Glu Gln Asn Asn Asp Val Asp Asn Ile	
65 70 75 80	
tct agg aat gag ata ttg gac gat gat agc ttc gct ggt agt tta ata	288
Ser Arg Asn Glu Ile Leu Asp Asp Asp Ser Phe Ala Gly Ser Leu Ile	
85 90 95	
tgg gat aac gaa tcc aat gtt atg gcg cct agc aca gaa cac att tac	336
Trp Asp Asn Glu Ser Asn Val Met Ala Pro Ser Thr Glu His Ile Tyr	
100 105 110	
gat agt gtt gct gga agc acg ctg cta ata aat aat gat cgt aat gaa	384
Asp Ser Val Ala Gly Ser Thr Leu Leu Ile Asn Asn Asp Arg Asn Glu	
115 120 125	
cag act att tat cag aac act aca gta gta att aat gaa acg gag act	432
Gln Thr Ile Tyr Gln Asn Thr Thr Val Val Ile Asn Glu Thr Glu Thr	
130 135 140	
gtt aaa gta ctt aat gaa gat acc aaa cag aat cct aac tat tca tcc	480
Val Lys Val Leu Asn Glu Asp Thr Lys Gln Asn Pro Asn Tyr Ser Ser	
145 150 155 160	
aat cct ttc gta aat tat aat aaa acc agt att tgt agc aag tca aat	528
Asn Pro Phe Val Asn Tyr Asn Lys Thr Ser Ile Cys Ser Lys Ser Asn	
165 170 175	

ccg ttt att aca gaa ctt aac aat aaa ttt agt gag aat aat ccg ttt 576
 Pro Phe Ile Thr Glu Leu Asn Asn Lys Phe Ser Glu Asn Asn Pro Phe
 180 185 190

aga cga gca cat agc gat gat tat ctt aat aag caa gaa caa gat cat 624
 Arg Arg Ala His Ser Asp Asp Tyr Leu Asn Lys Gln Glu Gln Asp His
 195 200 205

gaa cac gat gat ata gaa tca tcg gtc gta tca ttg gtg tga 666
 Glu His Asp Asp Ile Glu Ser Ser Val Val Ser Leu Val *
 210 215 220

<210> 336
 <211> 221
 <212> PRT
 <213> vaccinia virus

<400> 336
 Met Met Leu Val Pro Leu Ile Thr Val Thr Val Val Ala Gly Thr Ile
 1 5 10 15
 Leu Val Cys Tyr Ile Leu Tyr Ile Cys Arg Lys Lys Ile Arg Thr Val
 20 25 30
 Tyr Asn Asp Asn Lys Ile Ile Met Thr Lys Leu Lys Lys Ile Lys Ser
 35 40 45
 Ser Asn Ser Ser Lys Ser Ser Lys Ser Thr Asp Ser Glu Ser Asp Trp
 50 55 60
 Glu Asp His Cys Ser Ala Met Glu Gln Asn Asn Asp Val Asp Asn Ile
 65 70 75 80
 Ser Arg Asn Glu Ile Leu Asp Asp Asp Ser Phe Ala Gly Ser Leu Ile
 85 90 95
 Trp Asp Asn Glu Ser Asn Val Met Ala Pro Ser Thr Glu His Ile Tyr
 100 105 110
 Asp Ser Val Ala Gly Ser Thr Leu Leu Ile Asn Asn Asp Arg Asn Glu
 115 120 125
 Gln Thr Ile Tyr Gln Asn Thr Thr Val Val Ile Asn Glu Thr Glu Thr
 130 135 140
 Val Lys Val Leu Asn Glu Asp Thr Lys Gln Asn Pro Asn Tyr Ser Ser
 145 150 155 160
 Asn Pro Phe Val Asn Tyr Asn Lys Thr Ser Ile Cys Ser Lys Ser Asn
 165 170 175
 Pro Phe Ile Thr Glu Leu Asn Asn Lys Phe Ser Glu Asn Asn Pro Phe
 180 185 190
 Arg Arg Ala His Ser Asp Asp Tyr Leu Asn Lys Gln Glu Gln Asp His
 195 200 205
 Glu His Asp Asp Ile Glu Ser Ser Val Val Ser Leu Val
 210 215 220

<210> 337
 <211> 792
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(792)

<400> 337

atg gag ata ttc cct gta ttc ggc att tct aaa att agc aat ttt att	48
Met Glu Ile Phe Pro Val Phe Gly Ile Ser Lys Ile Ser Asn Phe Ile	
1 5 10 15	
gct aat aat gac tgt aga tat tat ata gat aca gaa cat caa aaa att	96
Ala Asn Asn Asp Cys Arg Tyr Tyr Ile Asp Thr Glu His Gln Lys Ile	
20 25 30	
ata tct gat gag atc aat aga cag atg gat gaa acg gta ctt ctt acc	144
Ile Ser Asp Glu Ile Asn Arg Gln Met Asp Glu Thr Val Leu Leu Thr	
35 40 45	
aac atc tta agc gta gaa gtt gta aat gac aat gag atg tac cat ctt	192
Asn Ile Leu Ser Val Glu Val Val Asn Asp Asn Glu Met Tyr His Leu	
50 55 60	
att cct cat aga tta tct acg att ata ctc tgt att agt tct gtc gga	240
Ile Pro His Arg Leu Ser Thr Ile Ile Leu Cys Ile Ser Ser Val Gly	
65 70 75 80	
gga tgt gtt atc tct ata gat aat gac gtc aat ggc aaa aat att cta	288
Gly Cys Val Ile Ser Ile Asp Asn Asp Val Asn Gly Lys Asn Ile Leu	
85 90 95	
acc ttt ccc att gat cat gct gta atc ata tcc cca ctg agt aaa tgt	336
Thr Phe Pro Ile Asp His Ala Val Ile Ile Ser Pro Leu Ser Lys Cys	
100 105 110	
gtc gta gtt agc aag ggt cct aca acc ata ttg gtt gtt aaa gcg gat	384
Val Val Val Ser Lys Gly Pro Thr Thr Ile Leu Val Val Lys Ala Asp	
115 120 125	
ata ccc agc aaa cga ttg gta aca tct ttt aca aac gac ata cta tat	432
Ile Pro Ser Lys Arg Leu Val Thr Ser Phe Thr Asn Asp Ile Leu Tyr	
130 135 140	
gta aac aat ctg tca ctg att aat tat ttg ccg ttg tct gta ttc att	480
Val Asn Asn Leu Ser Leu Ile Asn Tyr Leu Pro Leu Ser Val Phe Ile	
145 150 155 160	
att aga cga gtt acc gac tat ttg gat aga cac ata tgc gat cag ata	528
Ile Arg Arg Val Thr Asp Tyr Leu Asp Arg His Ile Cys Asp Gln Ile	
165 170 175	
ttt gcg aat aat aag tgg tat tcc att ata acc atc gac aat aag cag	576
Phe Ala Asn Asn Lys Trp Tyr Ser Ile Ile Thr Ile Asp Asn Lys Gln	
180 185 190	
ttt cct att cca tca aac tgt ata ggt atg tcc tct gcc aag tac ata	624
Phe Pro Ile Pro Ser Asn Cys Ile Gly Met Ser Ser Ala Lys Tyr Ile	
195 200 205	
aat tct agc atc gag caa gat act tta ata cat gtt tgt aac ctc gag	672
Asn Ser Ser Ile Glu Gln Asp Thr Leu Ile His Val Cys Asn Leu Glu	
210 215 220	
cat cca ttc gac tta gta tac aaa aaa atg cag tct tac aat tct gta	720
His Pro Phe Asp Leu Val Tyr Lys Lys Met Gln Ser Tyr Asn Ser Val	

225	230	235	240	
cct atc aag gaa caa ata ttg tac ggt aga att gat aat ata aat atg				768
Pro Ile Lys Glu Gln Ile Leu Tyr Gly Arg Ile Asp Asn Ile Asn Met				
	245	250	255	

agc att agt att tct gtg tat taa				792
Ser Ile Ser Ile Ser Val Tyr *				
	260			

<210> 338
 <211> 263
 <212> PRT
 <213> vaccinia virus

<400> 338

Met Glu Ile Phe Pro Val Phe Gly Ile Ser Lys Ile Ser Asn Phe Ile				
1 5 10 15				
Ala Asn Asn Asp Cys Arg Tyr Tyr Ile Asp Thr Glu His Gln Lys Ile				
20 25 30				
Ile Ser Asp Glu Ile Asn Arg Gln Met Asp Glu Thr Val Leu Leu Thr				
35 40 45				
Asn Ile Leu Ser Val Glu Val Val Asn Asp Asn Glu Met Tyr His Leu				
50 55 60				
Ile Pro His Arg Leu Ser Thr Ile Ile Leu Cys Ile Ser Ser Val Gly				
65 70 75 80				
Gly Cys Val Ile Ser Ile Asp Asn Asp Val Asn Gly Lys Asn Ile Leu				
85 90 95				
Thr Phe Pro Ile Asp His Ala Val Ile Ile Ser Pro Leu Ser Lys Cys				
100 105 110				
Val Val Val Ser Lys Gly Pro Thr Thr Ile Leu Val Val Lys Ala Asp				
115 120 125				
Ile Pro Ser Lys Arg Leu Val Thr Ser Phe Thr Asn Asp Ile Leu Tyr				
130 135 140				
Val Asn Asn Leu Ser Leu Ile Asn Tyr Leu Pro Leu Ser Val Phe Ile				
145 150 155 160				
Ile Arg Arg Val Thr Asp Tyr Leu Asp Arg His Ile Cys Asp Gln Ile				
165 170 175				
Phe Ala Asn Asn Lys Trp Tyr Ser Ile Ile Thr Ile Asp Asn Lys Gln				
180 185 190				
Phe Pro Ile Pro Ser Asn Cys Ile Gly Met Ser Ser Ala Lys Tyr Ile				
195 200 205				
Asn Ser Ser Ile Glu Gln Asp Thr Leu Ile His Val Cys Asn Leu Glu				
210 215 220				
His Pro Phe Asp Leu Val Tyr Lys Lys Met Gln Ser Tyr Asn Ser Val				
225 230 235 240				
Pro Ile Lys Glu Gln Ile Leu Tyr Gly Arg Ile Asp Asn Ile Asn Met				
245 250 255				
Ser Ile Ser Ile Ser Val Tyr				
260				

<210> 339
 <211> 189
 <212> DNA
 <213> vaccinia virus

<220>

<221> CDS
 <222> (1)...(189)

<400> 339
 atg gat tca ttc tct tct ctt ttt atg aaa ctc tgt tgt ata tct act 48
 Met Asp Ser Phe Ser Ser Leu Phe Met Lys Leu Cys Cys Ile Ser Thr
 1 5 10 15
 gat aaa act gga agc aaa aaa tct gat aaa aag aat aag aat aag atc 96
 Asp Lys Thr Gly Ser Lys Lys Ser Asp Lys Lys Asn Lys Asn Lys Ile
 20 25 30
 aag gat tat atg gaa cac gat tat tat aaa ata aca ata gtt cct ggt 144
 Lys Asp Tyr Met Glu His Asp Tyr Tyr Lys Ile Thr Ile Val Pro Gly
 35 40 45
 tcc tct tcc acg tct act agc tcg tgg tat tat aca cat gcc tag 189
 Ser Ser Ser Thr Ser Thr Ser Ser Trp Tyr Tyr Thr His Ala *
 50 55 60

<210> 340
 <211> 62
 <212> PRT
 <213> vaccinia virus

<400> 340
 Met Asp Ser Phe Ser Ser Leu Phe Met Lys Leu Cys Cys Ile Ser Thr
 1 5 10 15
 Asp Lys Thr Gly Ser Lys Lys Ser Asp Lys Lys Asn Lys Asn Lys Ile
 20 25 30
 Lys Asp Tyr Met Glu His Asp Tyr Lys Ile Thr Ile Val Pro Gly
 35 40 45
 Ser Ser Ser Thr Ser Thr Ser Ser Trp Tyr Tyr Thr His Ala
 50 55 60

<210> 341
 <211> 831
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(831)

<400> 341
 atg tca aga gtt aga ata tcg ttg ata tac ctc tat acg ttg gtt gtt 48
 Met Ser Arg Val Arg Ile Ser Leu Ile Tyr Leu Tyr Thr Leu Val Val
 1 5 10 15
 ata aca act aca aag acc ata gag tat aca gca tgt aat gat acc atc 96
 Ile Thr Thr Thr Lys Thr Ile Glu Tyr Thr Ala Cys Asn Asp Thr Ile
 20 25 30
 att att ccg tgt act ata gat aat ccg aca aag tat att aga tgg aaa 144
 Ile Ile Pro Cys Thr Ile Asp Asn Pro Thr Lys Tyr Ile Arg Trp Lys
 35 40 45

ttg gat aac cat gat att tta act tat aat aaa act tcc aag acg acc	192
Leu Asp Asn His Asp Ile Leu Thr Tyr Asn Lys Thr Ser Lys Thr Thr	
50 55 60	
ata tta agt aaa tgg cat act agt gct aga ctt cat tcg tta tcg gat	240
Ile Leu Ser Lys Trp His Thr Ser Ala Arg Leu His Ser Leu Ser Asp	
65 70 75 80	
agt gat gtc tca ttg att ata gaa tat aaa gat atc tta cca ggt acg	288
Ser Asp Val Ser Leu Ile Ile Glu Tyr Lys Asp Ile Leu Pro Gly Thr	
85 90 95	
tat aca tgc ggg gat aat act gga ata aaa tct act gtg aaa tta gtt	336
Tyr Thr Cys Gly Asp Asn Thr Gly Ile Lys Ser Thr Val Lys Leu Val	
100 105 110	
caa ctt cat act aat tgg ttt aat gat tac caa aca atg ttg atg ttt	384
Gln Leu His Thr Asn Trp Phe Asn Asp Tyr Gln Thr Met Leu Met Phe	
115 120 125	
atc ttt acg ggc att act tta ttc tta tta ttt ctc gag atc act tat	432
Ile Phe Thr Gly Ile Thr Leu Phe Leu Leu Phe Leu Glu Ile Thr Tyr	
130 135 140	
aca tcg ata tcc gtt gta ttt tct act aat tta gga atc tta caa gta	480
Thr Ser Ile Ser Val Val Phe Ser Thr Asn Leu Gly Ile Leu Gln Val	
145 150 155 160	
ttt ggt tgt gtt att gcc atg ata gag tta tgc gga gca ttt ttg ttt	528
Phe Gly Cys Val Ile Ala Met Ile Glu Leu Cys Gly Ala Phe Leu Phe	
165 170 175	
tat ccg tca atg ttt act ctc agg cat att atc gga ttg ttg atg atg	576
Tyr Pro Ser Met Phe Thr Leu Arg His Ile Ile Gly Leu Leu Met Met	
180 185 190	
aca tta ccg tct ata ttt ctt ata att act aaa gtg ttt tca ttt tgg	624
Thr Leu Pro Ser Ile Phe Leu Ile Ile Thr Lys Val Phe Ser Phe Trp	
195 200 205	
tta ctg tgt aaa tta tca tgt gct gta cac ctc att atc tac tat caa	672
Leu Leu Cys Lys Leu Ser Cys Ala Val His Leu Ile Ile Tyr Tyr Gln	
210 215 220	
ttg gcc gga tac att tta acg gtt ttg ggt ttg gga ttg agt tta aag	720
Leu Ala Gly Tyr Ile Leu Thr Val Leu Gly Leu Gly Leu Ser Leu Lys	
225 230 235 240	
gaa tgt gtt gat gga act ctg tta tta tct ggg ttg gga act att atg	768
Glu Cys Val Asp Gly Thr Leu Leu Leu Ser Gly Leu Gly Thr Ile Met	
245 250 255	
gtg tct gaa cat ttt agc ctg tta ttt cta gtc tgc ttt cca tca acg	816
Val Ser Glu His Phe Ser Leu Leu Phe Leu Val Cys Phe Pro Ser Thr	
260 265 270	
caa aga gac tat tac	831
Gln Arg Asp Tyr Tyr	

275

<210> 342
 <211> 277
 <212> PRT
 <213> vaccinia virus

<400> 342
 Met Ser Arg Val Arg Ile Ser Leu Ile Tyr Leu Tyr Thr Leu Val Val
 1 5 10 15
 Ile Thr Thr Thr Lys Thr Ile Glu Tyr Thr Ala Cys Asn Asp Thr Ile
 20 25 30
 Ile Ile Pro Cys Thr Ile Asp Asn Pro Thr Lys Tyr Ile Arg Trp Lys
 35 40 45
 Leu Asp Asn His Asp Ile Leu Thr Tyr Asn Lys Thr Ser Lys Thr Thr
 50 55 60
 Ile Leu Ser Lys Trp His Thr Ser Ala Arg Leu His Ser Leu Ser Asp
 65 70 75 80
 Ser Asp Val Ser Leu Ile Ile Glu Tyr Lys Asp Ile Leu Pro Gly Thr
 85 90 95
 Tyr Thr Cys Gly Asp Asn Thr Gly Ile Lys Ser Thr Val Lys Leu Val
 100 105 110
 Gln Leu His Thr Asn Trp Phe Asn Asp Tyr Gln Thr Met Leu Met Phe
 115 120 125
 Ile Phe Thr Gly Ile Thr Leu Phe Leu Leu Phe Leu Glu Ile Thr Tyr
 130 135 140
 Thr Ser Ile Ser Val Val Phe Ser Thr Asn Leu Gly Ile Leu Gln Val
 145 150 155 160
 Phe Gly Cys Val Ile Ala Met Ile Glu Leu Cys Gly Ala Phe Leu Phe
 165 170 175
 Tyr Pro Ser Met Phe Thr Leu Arg His Ile Ile Gly Leu Leu Met Met
 180 185 190
 Thr Leu Pro Ser Ile Phe Leu Ile Thr Lys Val Phe Ser Phe Trp
 195 200 205
 Leu Leu Cys Lys Leu Ser Cys Ala Val His Leu Ile Ile Tyr Tyr Gln
 210 215 220
 Leu Ala Gly Tyr Ile Leu Thr Val Leu Gly Leu Gly Leu Ser Leu Lys
 225 230 235 240
 Glu Cys Val Asp Gly Thr Leu Leu Leu Ser Gly Leu Gly Thr Ile Met
 245 250 255
 Val Ser Glu His Phe Ser Leu Leu Phe Leu Val Cys Phe Pro Ser Thr
 260 265 270
 Gln Arg Asp Tyr Tyr
 275

<210> 343
 <211> 399
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(399)

<400> 343
 atg ata cct ttg tta ttt att tta ttc tat ttt gct aac ggt att gaa 48
 Met Ile Pro Leu Leu Phe Ile Leu Phe Tyr Phe Ala Asn Gly Ile Glu

1	5	10	15	
tgg cat aag ttt gaa acg agt gaa gaa ata att tct act tac tta tta	96			
Trp His Lys Phe Glu Thr Ser Glu Glu Ile Ile Ser Thr Tyr Leu Leu				
20 25 30				
gac gac gta tta tac acg ggt gtt aat ggg gcg gta tac aca ttt tca	144			
Asp Asp Val Leu Tyr Thr Gly Val Asn Gly Ala Val Tyr Thr Phe Ser				
35 40 45				
aat aat aaa cta aac aaa act ggt tta act aat aat aat tat ata aca	192			
Asn Asn Lys Leu Asn Lys Thr Gly Leu Thr Asn Asn Asn Tyr Ile Thr				
50 55 60				
aca tct ata aaa gta gag gat gcg gat aag gat aca tta gta tgc gga	240			
Thr Ser Ile Lys Val Glu Asp Ala Asp Lys Asp Thr Leu Val Cys Gly				
65 70 75 80				
acc aat aac gga aat ccc aaa tgt tgg aaa ata gac ggt tca gac gac	288			
Thr Asn Asn Gly Asn Pro Lys Cys Trp Lys Ile Asp Gly Ser Asp Asp				
85 90 95				
cca aaa cat aga ggt aga gga tac gct cct tat agc aaa gta acg ata	336			
Pro Lys His Arg Gly Arg Gly Tyr Ala Pro Tyr Ser Lys Val Thr Ile				
100 105 110				
atc agt tac aac gaa tgt gta cta tct gac ata aac ata tca aaa gaa	384			
Ile Ser Tyr Asn Glu Cys Val Leu Ser Asp Ile Asn Ile Ser Lys Glu				
115 120 125				
gga att aaa cga tag	399			
Gly Ile Lys Arg *				
130				

<210> 344
 <211> 132
 <212> PRT
 <213> vaccinia virus

<400> 344

Met Ile Pro Leu Leu Phe Ile Leu Phe Tyr Phe Ala Asn Gly Ile Glu	
1 5 10 15	
Trp His Lys Phe Glu Thr Ser Glu Glu Ile Ile Ser Thr Tyr Leu Leu	
20 25 30	
Asp Asp Val Leu Tyr Thr Gly Val Asn Gly Ala Val Tyr Thr Phe Ser	
35 40 45	
Asn Asn Lys Leu Asn Lys Thr Gly Leu Thr Asn Asn Asn Tyr Ile Thr	
50 55 60	
Thr Ser Ile Lys Val Glu Asp Ala Asp Lys Asp Thr Leu Val Cys Gly	
65 70 75 80	
Thr Asn Asn Gly Asn Pro Lys Cys Trp Lys Ile Asp Gly Ser Asp Asp	
85 90 95	
Pro Lys His Arg Gly Arg Gly Tyr Ala Pro Tyr Ser Lys Val Thr Ile	
100 105 110	
Ile Ser Tyr Asn Glu Cys Val Leu Ser Asp Ile Asn Ile Ser Lys Glu	
115 120 125	
Gly Ile Lys Arg	
130	

<210> 345
 <211> 429
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(429)

<400> 345
 atg aat acc att aaa caa tct ttt tct acg tca aaa ttg gaa gga tat 48
 Met Asn Thr Ile Lys Gln Ser Phe Ser Thr Ser Lys Leu Glu Gly Tyr
 1 5 10 15
 aca aag caa ttg ccg tct cca gct cct ggt ata tgt cta cca gct gga 96
 Thr Lys Gln Leu Pro Ser Pro Ala Pro Gly Ile Cys Leu Pro Ala Gly
 20 25 30
 aaa gtt gtt cca cat acc acg ttt gaa gtc ata gaa aaa tat aat gta 144
 Lys Val Val Pro His Thr Thr Phe Glu Val Ile Glu Lys Tyr Asn Val
 35 40 45
 cta gat gat att ata aag cct tta tct aac caa cct atc ttc gaa gga 192
 Leu Asp Asp Ile Ile Lys Pro Leu Ser Asn Gln Pro Ile Phe Glu Gly
 50 55 60
 ccg tct ggc gtt aaa tgg ttc gat ata aag gag aag gaa aat gaa cat 240
 Pro Ser Gly Val Lys Trp Phe Asp Ile Lys Glu Lys Glu Asn Glu His
 65 70 75 80
 cgg gaa tat aga ata tac ttc ata aaa gaa aat tct ata tat tca ttc 288
 Arg Glu Tyr Arg Ile Tyr Phe Ile Lys Glu Asn Ser Ile Tyr Ser Phe
 85 90 95
 gat aca aaa act aaa caa act cgc agt gca caa gtc aat gca caa cta 336
 Asp Thr Lys Thr Lys Gln Thr Arg Ser Ala Gln Val Asn Ala Gln Leu
 100 105 110
 ttt tca gta atg gta act gcg aaa ccg tta ttt ata gca gat ata ggg 384
 Phe Ser Val Met Val Thr Ala Lys Pro Leu Phe Ile Ala Asp Ile Gly
 115 120 125
 ata gga gta gga atg cca caa atg aaa aaa ata ctt aaa atg taa 429
 Ile Gly Val Gly Met Pro Gln Met Lys Lys Ile Leu Lys Met *
 130 135 140

<210> 346
 <211> 142
 <212> PRT
 <213> vaccinia virus

<400> 346
 Met Asn Thr Ile Lys Gln Ser Phe Ser Thr Ser Lys Leu Glu Gly Tyr
 1 5 10 15
 Thr Lys Gln Leu Pro Ser Pro Ala Pro Gly Ile Cys Leu Pro Ala Gly
 20 25 30

Lys	Val	Val	Pro	His	Thr	Thr	Phe	Glu	Val	Ile	Glu	Lys	Tyr	Asn	Val
	35						40					45			
Leu	Asp	Asp	Ile	Ile	Lys	Pro	Leu	Ser	Asn	Gln	Pro	Ile	Phe	Glu	Gly
	50					55					60				
Pro	Ser	Gly	Val	Lys	Trp	Phe	Asp	Ile	Lys	Glu	Lys	Glu	Asn	Glu	His
65					70					75					80
Arg	Glu	Tyr	Arg	Ile	Tyr	Phe	Ile	Lys	Glu	Asn	Ser	Ile	Tyr	Ser	Phe
				85					90					95	
Asp	Thr	Lys	Thr	Lys	Gln	Thr	Arg	Ser	Ala	Gln	Val	Asn	Ala	Gln	Leu
			100					105					110		
Phe	Ser	Val	Met	Val	Thr	Ala	Lys	Pro	Leu	Phe	Ile	Ala	Asp	Ile	Gly
		115					120					125			
Ile	Gly	Val	Gly	Met	Pro	Gln	Met	Lys	Lys	Ile	Leu	Lys	Met		
	130					135					140				

<210> 347
 <211> 507
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(507)

<400> 347																
atg	aac	aaa	cat	aag	aca	gat	tat	gct	ggt	tat	gct	tgc	tgc	gta	ata	48
Met	Asn	Lys	His	Lys	Thr	Asp	Tyr	Ala	Gly	Tyr	Ala	Cys	Cys	Val	Ile	
1				5					10					15		
tgc	ggt	cta	att	gtt	gga	att	att	ttt	aca	gcg	aca	cta	tta	aaa	gtt	96
Cys	Gly	Leu	Ile	Val	Gly	Ile	Ile	Phe	Thr	Ala	Thr	Leu	Leu	Lys	Val	
			20					25					30			
gta	gaa	cgt	aaa	tta	gtt	cat	aca	cca	tca	ata	gat	aaa	acg	ata	aaa	144
Val	Glu	Arg	Lys	Leu	Val	His	Thr	Pro	Ser	Ile	Asp	Lys	Thr	Ile	Lys	
		35					40					45				
gat	gca	tat	att	aga	gaa	gat	tgt	cct	act	gac	tgg	ata	agc	tat	aat	192
Asp	Ala	Tyr	Ile	Arg	Glu	Asp	Cys	Pro	Thr	Asp	Trp	Ile	Ser	Tyr	Asn	
	50					55					60					
aat	aaa	tgt	atc	cat	tta	tct	act	gat	cga	aaa	acc	tgg	gag	gaa	gga	240
Asn	Lys	Cys	Ile	His	Leu	Ser	Thr	Asp	Arg	Lys	Thr	Trp	Glu	Glu	Gly	
65					70					75					80	
cgt	aat	aca	tgc	aaa	gct	cta	aat	cca	aat	tcg	gat	cta	att	aag	ata	288
Arg	Asn	Thr	Cys	Lys	Ala	Leu	Asn	Pro	Asn	Ser	Asp	Leu	Ile	Lys	Ile	
				85				90						95		
gag	act	cca	aac	gag	tta	agt	ttt	tta	aga	agc	att	aga	cgc	gga	tat	336
Glu	Thr	Pro	Asn	Glu	Leu	Ser	Phe	Leu	Arg	Ser	Ile	Arg	Arg	Gly	Tyr	
			100					105						110		
tgg	gta	gga	gaa	tcc	gaa	ata	tta	aac	cag	aca	acc	cca	tat	aat	ttt	384
Trp	Val	Gly	Glu	Ser	Glu	Ile	Leu	Asn	Gln	Thr	Thr	Pro	Tyr	Asn	Phe	
		115					120					125				
ata	gct	aag	aat	gcc	acg	aag	aat	gga	aat	ata	ttt	gta	gta	caa	cga	432

Ile	Ala	Lys	Asn	Ala	Thr	Lys	Asn	Gly	Asn	Ile	Phe	Val	Val	Gln	Arg		
130						135					140						
ata	ctc	cca	aac	tgc	att	cgt	gtt	aca	cta	tat	aac	aat	tac	act	aca	480	
Ile	Leu	Pro	Asn	Cys	Ile	Arg	Val	Thr	Leu	Tyr	Asn	Asn	Tyr	Thr	Thr		
145					150					155					160		
ttt	tta	tca	tac	cac	tac	ttc	ggt	tag								507	
Phe	Leu	Ser	Tyr	His	Tyr	Phe	Gly	*									
				165													

<210> 348
 <211> 168
 <212> PRT
 <213> vaccinia virus

<400> 348

Met	Asn	Lys	His	Lys	Thr	Asp	Tyr	Ala	Gly	Tyr	Ala	Cys	Cys	Val	Ile		
1				5					10					15			
Cys	Gly	Leu	Ile	Val	Gly	Ile	Ile	Phe	Thr	Ala	Thr	Leu	Leu	Lys	Val		
		20						25					30				
Val	Glu	Arg	Lys	Leu	Val	His	Thr	Pro	Ser	Ile	Asp	Lys	Thr	Ile	Lys		
		35				40						45					
Asp	Ala	Tyr	Ile	Arg	Glu	Asp	Cys	Pro	Thr	Asp	Trp	Ile	Ser	Tyr	Asn		
	50				55					60							
Asn	Lys	Cys	Ile	His	Leu	Ser	Thr	Asp	Arg	Lys	Thr	Trp	Glu	Glu	Gly		
65				70					75					80			
Arg	Asn	Thr	Cys	Lys	Ala	Leu	Asn	Pro	Asn	Ser	Asp	Leu	Ile	Lys	Ile		
			85					90					95				
Glu	Thr	Pro	Asn	Glu	Leu	Ser	Phe	Leu	Arg	Ser	Ile	Arg	Arg	Gly	Tyr		
		100						105					110				
Trp	Val	Gly	Glu	Ser	Glu	Ile	Leu	Asn	Gln	Thr	Thr	Pro	Tyr	Asn	Phe		
	115					120						125					
Ile	Ala	Lys	Asn	Ala	Thr	Lys	Asn	Gly	Asn	Ile	Phe	Val	Val	Gln	Arg		
	130				135						140						
Ile	Leu	Pro	Asn	Cys	Ile	Arg	Val	Thr	Leu	Tyr	Asn	Asn	Tyr	Thr	Thr		
145					150					155					160		
Phe	Leu	Ser	Tyr	His	Tyr	Phe	Gly										
				165													

<210> 349
 <211> 657
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(657)

<400> 349

atg	tac	tcg	tta	tta	ttt	att	att	ttg	atg	tgt	ata	cca	ttt	agt	ttt	48	
Met	Tyr	Ser	Leu	Leu	Phe	Ile	Ile	Leu	Met	Cys	Ile	Pro	Phe	Ser	Phe		
1			5					10						15			
caa	aca	gtg	tat	gat	gat	aaa	tcg	gta	tgc	gat	tct	gac	aat	aaa	gaa	96	
Gln	Thr	Val	Tyr	Asp	Asp	Lys	Ser	Val	Cys	Asp	Ser	Asp	Asn	Lys	Glu		
			20					25					30				

tat atg gga atc gaa gtt tat gta gaa gca aca cta gac gaa cac ctc	144
Tyr Met Gly Ile Glu Val Tyr Val Glu Ala Thr Leu Asp Glu His Leu	
35 40 45	
aga caa aca acg tgt gaa tcc gaa atc cat aaa tat ggt gca tct gta	192
Arg Gln Thr Thr Cys Glu Ser Glu Ile His Lys Tyr Gly Ala Ser Val	
50 55 60	
tca aac gga gga tta aat att tct gtt gat tta tta aac tgt ttt ctt	240
Ser Asn Gly Gly Leu Asn Ile Ser Val Asp Leu Leu Asn Cys Phe Leu	
65 70 75 80	
aat ttt cat aca gtt ggt gta tac act aat cgc gat acc gta tac gcg	288
Asn Phe His Thr Val Gly Val Tyr Thr Asn Arg Asp Thr Val Tyr Ala	
85 90 95	
aag ttt gct agt ttg gat cca tgg act acg gaa cct ata aat tct atg	336
Lys Phe Ala Ser Leu Asp Pro Trp Thr Thr Glu Pro Ile Asn Ser Met	
100 105 110	
acc cat gac gat cta gta aaa tta aca aaa gaa tgt ata gtg gac att	384
Thr His Asp Asp Leu Val Lys Leu Thr Lys Glu Cys Ile Val Asp Ile	
115 120 125	
tat tta aaa tgt gaa gtg gat aaa aca aag gat ttc atg aaa act aat	432
Tyr Leu Lys Cys Glu Val Asp Lys Thr Lys Asp Phe Met Lys Thr Asn	
130 135 140	
ggc aat aga tta aaa cca aga gac ttt aaa act gtt cct cct tct gat	480
Gly Asn Arg Leu Lys Pro Arg Asp Phe Lys Thr Val Pro Pro Ser Asp	
145 150 155 160	
gta gga agc atg ata gaa cta cag tct gac tat tgc gta aac gat gtg	528
Val Gly Ser Met Ile Glu Leu Gln Ser Asp Tyr Cys Val Asn Asp Val	
165 170 175	
act gca tac gtc aaa ata tac gat gag tgc gga aac att aaa cag cat	576
Thr Ala Tyr Val Lys Ile Tyr Asp Glu Cys Gly Asn Ile Lys Gln His	
180 185 190	
tcc att cca aca cta aga gat tat ttt acc acc aag aat ggt caa cca	624
Ser Ile Pro Thr Leu Arg Asp Tyr Phe Thr Thr Lys Asn Gly Gln Pro	
195 200 205	
cgt aaa ata tta aag aaa aaa ttt gat aat tgt	657
Arg Lys Ile Leu Lys Lys Lys Phe Asp Asn Cys	
210 215	

<210> 350

<211> 219

<212> PRT

<213> vaccinia virus

<400> 350

Met Tyr Ser Leu Leu Phe Ile Ile Leu Met Cys Ile Pro Phe Ser Phe
1 5 10 15
Gln Thr Val Tyr Asp Asp Lys Ser Val Cys Asp Ser Asp Asn Lys Glu

	85	90	95	
gcg aga act cat acc gca ctt ata ttt ttg atg ggt aag cca aca aca				336
Ala Arg Thr His Thr Ala Leu Ile Phe Leu Met Gly Lys Pro Thr Thr				
	100	105	110	
tcc aga cgt gac gtg tat aga acg tgt aga gat cac gct acc cgt gta				384
Ser Arg Arg Asp Val Tyr Arg Thr Cys Arg Asp His Ala Thr Arg Val				
	115	120	125	
cg t gca act ggt aat taa				402
Arg Ala Thr Gly Asn *				
	130			

<210> 352
 <211> 133
 <212> PRT
 <213> vaccinia virus

<400> 352

Met	Ala	Glu	Trp	His	Lys	Ile	Ile	Glu	Asp	Ile	Ser	Lys	Asn	Asn	Lys
1				5				10					15		
Phe	Glu	Asp	Ala	Ala	Ile	Val	Asp	Tyr	Lys	Thr	Thr	Lys	Asn	Val	Leu
		20					25						30		
Ala	Ala	Ile	Pro	Asn	Arg	Thr	Phe	Ala	Lys	Ile	Asn	Pro	Gly	Glu	Ile
		35				40					45				
Ile	Pro	Leu	Ile	Thr	Asn	Arg	Asn	Ile	Leu	Lys	Pro	Leu	Ile	Gly	Gln
	50				55					60					
Lys	Tyr	Cys	Ile	Val	Tyr	Thr	Asn	Ser	Leu	Met	Asp	Glu	Asn	Thr	Tyr
65				70				75						80	
Ala	Met	Glu	Leu	Leu	Thr	Gly	Tyr	Ala	Pro	Val	Ser	Pro	Ile	Val	Ile
			85					90					95		
Ala	Arg	Thr	His	Thr	Ala	Leu	Ile	Phe	Leu	Met	Gly	Lys	Pro	Thr	Thr
		100					105						110		
Ser	Arg	Arg	Asp	Val	Tyr	Arg	Thr	Cys	Arg	Asp	His	Ala	Thr	Arg	Val
		115				120						125			
Arg	Ala	Thr	Gly	Asn											
		130													

<210> 353
 <211> 585
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(585)

<400> 353

atg atg atg atg aaa tgg ata ata tcc ata ttg acg atg tca ata atg															48
Met Met Met Met Lys Trp Ile Ile Ser Ile Leu Thr Met Ser Ile Met															
1		5				10							15		
ccg gta ttg gca tac agc tca tcg att ttt aga ttt cat tca gag gat															96
Pro Val Leu Ala Tyr Ser Ser Ser Ile Phe Arg Phe His Ser Glu Asp															
	20					25						30			

gtg gaa tta tgt tat ggg cat ttg tat ttt gat agg atc tat aat gta	144
Val Glu Leu Cys Tyr Gly His Leu Tyr Phe Asp Arg Ile Tyr Asn Val	
35 40 45	
gta aat ata aaa tat aat ccg cat att cca tat aga tat aat ttt att	192
Val Asn Ile Lys Tyr Asn Pro His Ile Pro Tyr Arg Tyr Asn Phe Ile	
50 55 60	
aat cgc acg tta acc gta gat gaa cta gac gat aat gtc ttt ttt aca	240
Asn Arg Thr Leu Thr Val Asp Glu Leu Asp Asp Asn Val Phe Phe Thr	
65 70 75 80	
cat ggt tat ttt tta aaa cac aaa tat ggt tca ctt aat cct agt ttg	288
His Gly Tyr Phe Leu Lys His Lys Tyr Gly Ser Leu Asn Pro Ser Leu	
85 90 95	
att gtc tca tta tca gga aac tta aaa tat aat gat ata caa tgc tca	336
Ile Val Ser Leu Ser Gly Asn Leu Lys Tyr Asn Asp Ile Gln Cys Ser	
100 105 110	
gta aat gta tcg tgt ctc att aaa aat ttg gca acg agt aca tct act	384
Val Asn Val Ser Cys Leu Ile Lys Asn Leu Ala Thr Ser Thr Ser Thr	
115 120 125	
ata tta aca tct aaa cat aag act tat tct cta cat cgg tcc aag tgt	432
Ile Leu Thr Ser Lys His Lys Thr Tyr Ser Leu His Arg Ser Lys Cys	
130 135 140	
att att ata ata gga tat gat tct att ata tgg tat aaa gat ata aat	480
Ile Ile Ile Ile Gly Tyr Asp Ser Ile Ile Trp Tyr Lys Asp Ile Asn	
145 150 155 160	
gac aag tat aat ggc atc tat gat ttt act gca ata tgt atg cta ata	528
Asp Lys Tyr Asn Gly Ile Tyr Asp Phe Thr Ala Ile Cys Met Leu Ile	
165 170 175	
gcg tct aca ttg ata gtg acc ata tac gtg ttt aaa aaa ata aaa atg	576
Ala Ser Thr Leu Ile Val Thr Ile Tyr Val Phe Lys Lys Ile Lys Met	
180 185 190	
aac tct taa	585
Asn Ser *	

<210> 354
 <211> 194
 <212> PRT
 <213> vaccinia virus

<400> 354
Met Met Met Met Lys Trp Ile Ile Ser Ile Leu Thr Met Ser Ile Met
1 5 10 15
Pro Val Leu Ala Tyr Ser Ser Ser Ile Phe Arg Phe His Ser Glu Asp
20 25 30
Val Glu Leu Cys Tyr Gly His Leu Tyr Phe Asp Arg Ile Tyr Asn Val
35 40 45
Val Asn Ile Lys Tyr Asn Pro His Ile Pro Tyr Arg Tyr Asn Phe Ile
50 55 60

Asn	Arg	Thr	Leu	Thr	Val	Asp	Glu	Leu	Asp	Asp	Asn	Val	Phe	Phe	Thr
65					70				75						80
His	Gly	Tyr	Phe	Leu	Lys	His	Lys	Tyr	Gly	Ser	Leu	Asn	Pro	Ser	Leu
			85					90					95		
Ile	Val	Ser	Leu	Ser	Gly	Asn	Leu	Lys	Tyr	Asn	Asp	Ile	Gln	Cys	Ser
		100					105					110			
Val	Asn	Val	Ser	Cys	Leu	Ile	Lys	Asn	Leu	Ala	Thr	Ser	Thr	Ser	Thr
	115						120					125			
Ile	Leu	Thr	Ser	Lys	His	Lys	Thr	Tyr	Ser	Leu	His	Arg	Ser	Lys	Cys
130					135					140					
Ile	Ile	Ile	Ile	Gly	Tyr	Asp	Ser	Ile	Ile	Trp	Tyr	Lys	Asp	Ile	Asn
145					150				155					160	
Asp	Lys	Tyr	Asn	Gly	Ile	Tyr	Asp	Phe	Thr	Ala	Ile	Cys	Met	Leu	Ile
			165				170						175		
Ala	Ser	Thr	Leu	Ile	Val	Thr	Ile	Tyr	Val	Phe	Lys	Lys	Ile	Lys	Met
			180				185						190		
Asn	Ser														

<210> 355
 <211> 1038
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1038)

<400> 355 atg gcc gtg tac gcg gtt act ggt ggt gcc gga ttt cta ggc agg tat 48 Met Ala Val Tyr Ala Val Thr Gly Gly Ala Gly Phe Leu Gly Arg Tyr 1 5 10 15														
ata gta aaa ctg tta att agt gca gat gat gtt caa gaa atc aga gtc 96 Ile Val Lys Leu Leu Ile Ser Ala Asp Asp Val Gln Glu Ile Arg Val 20 25 30														
ata gat att gta gaa gat cca caa cca ata acc tcg aaa gtt aag gtt 144 Ile Asp Ile Val Glu Asp Pro Gln Pro Ile Thr Ser Lys Val Lys Val 35 40 45														
ata aac tat ata caa tgt gat ata aac gac ttt gat aag gtg aga gaa 192 Ile Asn Tyr Ile Gln Cys Asp Ile Asn Asp Phe Asp Lys Val Arg Glu 50 55 60														
gcg cta aat ggg gta aat ctg att att cat aca gct gct cta gtg gat 240 Ala Leu Asn Gly Val Asn Leu Ile Ile His Thr Ala Ala Leu Val Asp 65 70 75 80														
gta ttt gga aaa tac acc gat aat gaa atc atg aaa gta aac tat tat 288 Val Phe Gly Lys Tyr Thr Asp Asn Glu Ile Met Lys Val Asn Tyr Tyr 85 90 95														
gga aca cag act att ttg gca gct tgt gtg gac cta gga atc aag tat 336 Gly Thr Gln Thr Ile Leu Ala Ala Cys Val Asp Leu Gly Ile Lys Tyr 100 105 110														
ttg atc tat act agt agc atg gaa gca ata gga ccc aat aaa cac ggt 384														

Leu	Ile	Tyr	Thr	Ser	Ser	Met	Glu	Ala	Ile	Gly	Pro	Asn	Lys	His	Gly		
	115						120					125					
gat	cca	ttc	atc	ggc	cat	gag	cat	acc	ctt	tat	gat	ata	tca	cca	gga	432	
Asp	Pro	Phe	Ile	Gly	His	Glu	His	Thr	Leu	Tyr	Asp	Ile	Ser	Pro	Gly		
	130					135					140						
cat	gta	tac	gca	aaa	agt	aaa	cgt	atg	gcc	gag	caa	ctg	ggt	atg	aaa	480	
His	Val	Tyr	Ala	Lys	Ser	Lys	Arg	Met	Ala	Glu	Gln	Leu	Val	Met	Lys		
	145				150				155						160		
gcc	aat	aat	tcc	gta	atc	atg	aat	gga	gca	aaa	ttg	tat	act	tgt	tgc	528	
Ala	Asn	Asn	Ser	Val	Ile	Met	Asn	Gly	Ala	Lys	Leu	Tyr	Thr	Cys	Cys		
			165					170						175			
cta	aga	ccc	act	gga	att	tac	gga	gaa	gga	gac	aaa	ttg	acg	aaa	gtc	576	
Leu	Arg	Pro	Thr	Gly	Ile	Tyr	Gly	Glu	Gly	Asp	Lys	Leu	Thr	Lys	Val		
			180					185					190				
ttt	tac	gag	caa	tgt	aag	caa	cac	ggt	aac	att	atg	tat	cgt	aca	gtc	624	
Phe	Tyr	Glu	Gln	Cys	Lys	Gln	His	Gly	Asn	Ile	Met	Tyr	Arg	Thr	Val		
	195					200						205					
gat	gat	aac	gcg	gta	cat	agc	cgg	gta	tat	gta	gga	aat	gct	gca	tgg	672	
Asp	Asp	Asn	Ala	Val	His	Ser	Arg	Val	Tyr	Val	Gly	Asn	Ala	Ala	Trp		
	210					215					220						
atg	cac	gtg	ttg	gct	gca	aaa	tat	atc	cag	tat	ccg	gga	tct	aag	att	720	
Met	His	Val	Leu	Ala	Ala	Lys	Tyr	Ile	Gln	Tyr	Pro	Gly	Ser	Lys	Ile		
	225				230				235						240		
aaa	gga	aat	gct	tac	ttt	tgc	tac	gat	tac	tct	cca	tcg	tgt	tcg	tac	768	
Lys	Gly	Asn	Ala	Tyr	Phe	Cys	Tyr	Asp	Tyr	Ser	Pro	Ser	Cys	Ser	Tyr		
			245					250						255			
gat	atg	ttt	aat	ctt	cta	ttg	atg	aaa	cca	ttg	gga	ata	gaa	caa	gga	816	
Asp	Met	Phe	Asn	Leu	Leu	Leu	Met	Lys	Pro	Leu	Gly	Ile	Glu	Gln	Gly		
			260					265					270				
tct	agg	att	cca	aga	tgg	atg	cta	aaa	atg	tac	gcg	tgc	aag	aat	gat	864	
Ser	Arg	Ile	Pro	Arg	Trp	Met	Leu	Lys	Met	Tyr	Ala	Cys	Lys	Asn	Asp		
		275				280						285					
atg	aag	aga	att	cta	ttt	aga	aaa	cca	tca	cta	ctc	aac	aac	tat	acg	912	
Met	Lys	Arg	Ile	Leu	Phe	Arg	Lys	Pro	Ser	Leu	Leu	Asn	Asn	Tyr	Thr		
	290					295					300						
ttg	aag	ata	tcc	aac	act	aca	ttt	gag	gtg	cgt	acc	aac	aat	gca	gaa	960	
Leu	Lys	Ile	Ser	Asn	Thr	Thr	Phe	Glu	Val	Arg	Thr	Asn	Asn	Ala	Glu		
	305				310				315						320		
cta	gat	ttc	aac	tac	tcc	cct	atc	ttt	gac	gtc	gat	gtg	gca	ttc	gaa	1008	
Leu	Asp	Phe	Asn	Tyr	Ser	Pro	Ile	Phe	Asp	Val	Asp	Val	Ala	Phe	Glu		
			325						330					335			
cga	aca	cgg	aaa	tgg	tta	gaa	gaa	tca	gaa							1038	
Arg	Thr	Arg	Lys	Trp	Leu	Glu	Glu	Ser	Glu								
			340					345									

<210> 356
 <211> 346
 <212> PRT
 <213> vaccinia virus

<400> 356
 Met Ala Val Tyr Ala Val Thr Gly Gly Ala Gly Phe Leu Gly Arg Tyr
 1 5 10 15
 Ile Val Lys Leu Ile Ser Ala Asp Asp Val Gln Glu Ile Arg Val
 20 25 30
 Ile Asp Ile Val Glu Asp Pro Gln Pro Ile Thr Ser Lys Val Lys Val
 35 40 45
 Ile Asn Tyr Ile Gln Cys Asp Ile Asn Asp Phe Asp Lys Val Arg Glu
 50 55 60
 Ala Leu Asn Gly Val Asn Leu Ile Ile His Thr Ala Ala Leu Val Asp
 65 70 75 80
 Val Phe Gly Lys Tyr Thr Asp Asn Glu Ile Met Lys Val Asn Tyr Tyr
 85 90 95
 Gly Thr Gln Thr Ile Leu Ala Ala Cys Val Asp Leu Gly Ile Lys Tyr
 100 105 110
 Leu Ile Tyr Thr Ser Ser Met Glu Ala Ile Gly Pro Asn Lys His Gly
 115 120 125
 Asp Pro Phe Ile Gly His Glu His Thr Leu Tyr Asp Ile Ser Pro Gly
 130 135 140
 His Val Tyr Ala Lys Ser Lys Arg Met Ala Glu Gln Leu Val Met Lys
 145 150 155 160
 Ala Asn Asn Ser Val Ile Met Asn Gly Ala Lys Leu Tyr Thr Cys Cys
 165 170 175
 Leu Arg Pro Thr Gly Ile Tyr Gly Glu Gly Asp Lys Leu Thr Lys Val
 180 185 190
 Phe Tyr Glu Gln Cys Lys Gln His Gly Asn Ile Met Tyr Arg Thr Val
 195 200 205
 Asp Asp Asn Ala Val His Ser Arg Val Tyr Val Gly Asn Ala Ala Trp
 210 215 220
 Met His Val Leu Ala Ala Lys Tyr Ile Gln Tyr Pro Gly Ser Lys Ile
 225 230 235 240
 Lys Gly Asn Ala Tyr Phe Cys Tyr Asp Tyr Ser Pro Ser Cys Ser Tyr
 245 250 255
 Asp Met Phe Asn Leu Leu Leu Met Lys Pro Leu Gly Ile Glu Gln Gly
 260 265 270
 Ser Arg Ile Pro Arg Trp Met Leu Lys Met Tyr Ala Cys Lys Asn Asp
 275 280 285
 Met Lys Arg Ile Leu Phe Arg Lys Pro Ser Leu Leu Asn Asn Tyr Thr
 290 295 300
 Leu Lys Ile Ser Asn Thr Thr Phe Glu Val Arg Thr Asn Asn Ala Glu
 305 310 315 320
 Leu Asp Phe Asn Tyr Ser Pro Ile Phe Asp Val Asp Val Ala Phe Glu
 325 330 335
 Arg Thr Arg Lys Trp Leu Glu Glu Ser Glu
 340 345

<210> 357
 <211> 378
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS

<222> (1)...(378)

<400> 357

atg gct gtt tgt ata ata aac cac gat aat atc aga gga gtt att tac	48
Met Ala Val Cys Ile Ile Asn His Asp Asn Ile Arg Gly Val Ile Tyr	
1 5 10 15	
ttt gaa cca gtt cat gga aaa gat aaa gtt tta gga tca gtt att gga	96
Phe Glu Pro Val His Gly Lys Asp Lys Val Leu Gly Ser Val Ile Gly	
20 25 30	
tta aaa tcc gga acg tat agt ttg ata att cat cgt tac gga gat att	144
Leu Lys Ser Gly Thr Tyr Ser Leu Ile Ile His Arg Tyr Gly Asp Ile	
35 40 45	
agt caa gga tgt gat tcc ata ggc agt cca gaa ata ttt atc ggt aac	192
Ser Gln Gly Cys Asp Ser Ile Gly Ser Pro Glu Ile Phe Ile Gly Asn	
50 55 60	
atc ttt gta aac aga tat ggt gta gca tat gtt tat tta gat aca gat	240
Ile Phe Val Asn Arg Tyr Gly Val Ala Tyr Val Tyr Leu Asp Thr Asp	
65 70 75 80	
gta aat ata ttt aca att att gga aag gcg tta tct att tca aaa aat	288
Val Asn Ile Phe Thr Ile Ile Gly Lys Ala Leu Ser Ile Ser Lys Asn	
85 90 95	
gat cag aga tta gcg tgt gga gtt att ggt att tct tac ata aat gaa	336
Asp Gln Arg Leu Ala Cys Gly Val Ile Gly Ile Ser Tyr Ile Asn Glu	
100 105 110	
aag ata ata cat ttt ctt aca att aac gag aat ggc gtt tga	378
Lys Ile Ile His Phe Leu Thr Ile Asn Glu Asn Gly Val *	
115 120 125	

<210> 358

<211> 125

<212> PRT

<213> vaccinia virus

<400> 358

Met Ala Val Cys Ile Ile Asn His Asp Asn Ile Arg Gly Val Ile Tyr	
1 5 10 15	
Phe Glu Pro Val His Gly Lys Asp Lys Val Leu Gly Ser Val Ile Gly	
20 25 30	
Leu Lys Ser Gly Thr Tyr Ser Leu Ile Ile His Arg Tyr Gly Asp Ile	
35 40 45	
Ser Gln Gly Cys Asp Ser Ile Gly Ser Pro Glu Ile Phe Ile Gly Asn	
50 55 60	
Ile Phe Val Asn Arg Tyr Gly Val Ala Tyr Val Tyr Leu Asp Thr Asp	
65 70 75 80	
Val Asn Ile Phe Thr Ile Ile Gly Lys Ala Leu Ser Ile Ser Lys Asn	
85 90 95	
Asp Gln Arg Leu Ala Cys Gly Val Ile Gly Ile Ser Tyr Ile Asn Glu	
100 105 110	
Lys Ile Ile His Phe Leu Thr Ile Asn Glu Asn Gly Val	
115 120 125	

<210> 359
 <211> 723
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(723)

<400> 359
 atg gcg ttt gat ata tca gtt aat gcg tct aaa aca ata aat gca tta 48
 Met Ala Phe Asp Ile Ser Val Asn Ala Ser Lys Thr Ile Asn Ala Leu
 1 5 10 15
 gtt tac ttt tct act cag caa aat aaa tta gtc ata cgt aat gaa gtt 96
 Val Tyr Phe Ser Thr Gln Gln Asn Lys Leu Val Ile Arg Asn Glu Val
 20 25 30
 aat gat aca cac tac act gtc gaa ttt gat agg gac aaa gta gtt gac 144
 Asn Asp Thr His Tyr Thr Val Glu Phe Asp Arg Asp Lys Val Val Asp
 35 40 45
 acg ttt att tca tat aat aga cat aat gac tcc ata gag ata aga ggg 192
 Thr Phe Ile Ser Tyr Asn Arg His Asn Asp Ser Ile Glu Ile Arg Gly
 50 55 60
 gtg ctt cca gag gaa act aat att ggt tgc gcg gtt aat acg ccg gtt 240
 Val Leu Pro Glu Glu Thr Asn Ile Gly Cys Ala Val Asn Thr Pro Val
 65 70 75 80
 agt atg act tac ttg tat aat aag tat agt ttt aaa ctg att tta gca 288
 Ser Met Thr Tyr Leu Tyr Asn Lys Tyr Ser Phe Lys Leu Ile Leu Ala
 85 90 95
 gaa tat ata aga cac aga aat act ata tcc ggc aat att tat tcg gca 336
 Glu Tyr Ile Arg His Arg Asn Thr Ile Ser Gly Asn Ile Tyr Ser Ala
 100 105 110
 ttg atg aca cta gat gat ttg gct att aaa cag tat gga gac att gat 384
 Leu Met Thr Leu Asp Asp Leu Ala Ile Lys Gln Tyr Gly Asp Ile Asp
 115 120 125
 cta tta ttt aat gag aaa ctt aaa gta gac tcc gat tcg gga cta ttt 432
 Leu Leu Phe Asn Glu Lys Leu Lys Val Asp Ser Asp Ser Gly Leu Phe
 130 135 140
 gac ttt gtc aac ttt gta aag gat atg ata tgt tgt gat tct aga ata 480
 Asp Phe Val Asn Phe Val Lys Asp Met Ile Cys Cys Asp Ser Arg Ile
 145 150 155 160
 gta gta gct cta tct agt cta gta tct aaa cat tgg gaa ttg aca aat 528
 Val Val Ala Leu Ser Ser Leu Val Ser Lys His Trp Glu Leu Thr Asn
 165 170 175
 aaa aag tat agg tgt atg gca tta gcc gaa cat ata tct gat agt att 576
 Lys Lys Tyr Arg Cys Met Ala Leu Ala Glu His Ile Ser Asp Ser Ile
 180 185 190

cca	ata	tct	gag	cta	tct	aga	cta	cga	tac	aat	cta	tgt	aag	tat	cta	624
Pro	Ile	Ser	Glu	Leu	Ser	Arg	Leu	Arg	Tyr	Asn	Leu	Cys	Lys	Tyr	Leu	
		195					200					205				
cgc	ggg	cac	act	gag	agc	ata	gag	gat	aaa	ttt	gat	tat	ttt	gaa	gac	672
Arg	Gly	His	Thr	Glu	Ser	Ile	Glu	Asp	Lys	Phe	Asp	Tyr	Phe	Glu	Asp	
	210					215					220					
gat	gat	tcg	tct	aca	tgt	tct	gcc	gta	acc	gac	agg	gaa	acg	gat	gta	720
Asp	Asp	Ser	Ser	Thr	Cys	Ser	Ala	Val	Thr	Asp	Arg	Glu	Thr	Asp	Val	
225					230					235					240	
taa																723
*																

<210> 360
 <211> 240
 <212> PRT
 <213> vaccinia virus

<400> 360																
Met	Ala	Phe	Asp	Ile	Ser	Val	Asn	Ala	Ser	Lys	Thr	Ile	Asn	Ala	Leu	
1				5					10					15		
Val	Tyr	Phe	Ser	Thr	Gln	Gln	Asn	Lys	Leu	Val	Ile	Arg	Asn	Glu	Val	
			20					25					30			
Asn	Asp	Thr	His	Tyr	Thr	Val	Glu	Phe	Asp	Arg	Asp	Lys	Val	Val	Asp	
		35					40					45				
Thr	Phe	Ile	Ser	Tyr	Asn	Arg	His	Asn	Asp	Ser	Ile	Glu	Ile	Arg	Gly	
	50				55						60					
Val	Leu	Pro	Glu	Glu	Thr	Asn	Ile	Gly	Cys	Ala	Val	Asn	Thr	Pro	Val	
65				70					75					80		
Ser	Met	Thr	Tyr	Leu	Tyr	Asn	Lys	Tyr	Ser	Phe	Lys	Leu	Ile	Leu	Ala	
			85					90						95		
Glu	Tyr	Ile	Arg	His	Arg	Asn	Thr	Ile	Ser	Gly	Asn	Ile	Tyr	Ser	Ala	
		100					105					110				
Leu	Met	Thr	Leu	Asp	Asp	Leu	Ala	Ile	Lys	Gln	Tyr	Gly	Asp	Ile	Asp	
	115					120						125				
Leu	Leu	Phe	Asn	Glu	Lys	Leu	Lys	Val	Asp	Ser	Asp	Ser	Gly	Leu	Phe	
	130				135						140					
Asp	Phe	Val	Asn	Phe	Val	Lys	Asp	Met	Ile	Cys	Cys	Asp	Ser	Arg	Ile	
145				150						155					160	
Val	Val	Ala	Leu	Ser	Ser	Leu	Val	Ser	Lys	His	Trp	Glu	Leu	Thr	Asn	
			165						170					175		
Lys	Lys	Tyr	Arg	Cys	Met	Ala	Leu	Ala	Glu	His	Ile	Ser	Asp	Ser	Ile	
		180					185						190			
Pro	Ile	Ser	Glu	Leu	Ser	Arg	Leu	Arg	Tyr	Asn	Leu	Cys	Lys	Tyr	Leu	
	195						200					205				
Arg	Gly	His	Thr	Glu	Ser	Ile	Glu	Asp	Lys	Phe	Asp	Tyr	Phe	Glu	Asp	
	210				215						220					
Asp	Asp	Ser	Ser	Thr	Cys	Ser	Ala	Val	Thr	Asp	Arg	Glu	Thr	Asp	Val	
225					230					235					240	

<210> 361
 <211> 732
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(732)

<400> 361

atg ggt aac aaa aat att aaa cca tct aag gaa aat aga ctg tcc atc	48
Met Gly Asn Lys Asn Ile Lys Pro Ser Lys Glu Asn Arg Leu Ser Ile	
1 5 10 15	
ttg tcc aag gat aag atg gat tca ttt aag aga gga tct tgg gca acg	96
Leu Ser Lys Asp Lys Met Asp Ser Phe Lys Arg Gly Ser Trp Ala Thr	
20 25 30	
tca tcc ttt aga gaa aag tcg cgt gca acc atc caa aga ttt tca tct	144
Ser Ser Phe Arg Glu Lys Ser Arg Ala Thr Ile Gln Arg Phe Ser Ser	
35 40 45	
ctt aga cga gaa cat att aaa gta gac cat cct gac aag ttc ctg gag	192
Leu Arg Arg Glu His Ile Lys Val Asp His Pro Asp Lys Phe Leu Glu	
50 55 60	
tta aag aga gag ata tat gaa ata att cag aaa tca tct tct ata gat	240
Leu Lys Arg Glu Ile Tyr Glu Ile Ile Gln Lys Ser Ser Ser Ile Asp	
65 70 75 80	
gtg gac aaa cgg act aag ctc atg tcc aac ata aaa acg atg atg ata	288
Val Asp Lys Arg Thr Lys Leu Met Ser Asn Ile Lys Thr Met Met Ile	
85 90 95	
aat cca ttc atg atc gag ggt tta atg aca tct tta gaa aac ttg gat	336
Asn Pro Phe Met Ile Glu Gly Leu Met Thr Ser Leu Glu Asn Leu Asp	
100 105 110	
ccc gat aac aag atg agc tac tca tcg gtg atg ata ttg gga gaa ttc	384
Pro Asp Asn Lys Met Ser Tyr Ser Ser Val Met Ile Leu Gly Glu Phe	
115 120 125	
gac atc atc aat ata agc gac aat gag gcg gca ttc gag ttc ata aac	432
Asp Ile Ile Asn Ile Ser Asp Asn Glu Ala Ala Phe Glu Phe Ile Asn	
130 135 140	
agt ctg ttg aaa tct ctt ctc ttg tta aat act aga caa cta aaa ctc	480
Ser Leu Leu Lys Ser Leu Leu Leu Leu Asn Thr Arg Gln Leu Lys Leu	
145 150 155 160	
ttg gaa tac tcc att agt aat gac ttg ttg tat gcc cac ata aat gcg	528
Leu Glu Tyr Ser Ile Ser Asn Asp Leu Leu Tyr Ala His Ile Asn Ala	
165 170 175	
ttg gag tat atc ata aaa aat aca ttt aat gtt cca gaa cgg caa ctg	576
Leu Glu Tyr Ile Ile Lys Asn Thr Phe Asn Val Pro Glu Arg Gln Leu	
180 185 190	
att ctg aga ggt caa tac cta act cca att ttc agt gat ttg tta aag	624
Ile Leu Arg Gly Gln Tyr Leu Thr Pro Ile Phe Ser Asp Leu Leu Lys	
195 200 205	
tat gcg ggt cta acc ata aag tca aac ata ctt atg tgg aat aaa cag	672
Tyr Ala Gly Leu Thr Ile Lys Ser Asn Ile Leu Met Trp Asn Lys Gln	

210	215	220	
ttt atc aaa cca gta tct	gac ctc tat aca tct	ata aga ctc ctt tat	720
Phe Ile Lys Pro Val Ser	Asp Leu Tyr Thr Ser	Ile Arg Leu Leu Tyr	
225	230	235 240	

tgt gtt aca gta		732
Cys Val Thr Val		

<210> 362
 <211> 244
 <212> PRT
 <213> vaccinia virus

<400> 362

Met Gly Asn Lys Asn Ile Lys Pro Ser Lys Glu Asn Arg Leu Ser Ile	
1 5 10 15	
Leu Ser Lys Asp Lys Met Asp Ser Phe Lys Arg Gly Ser Trp Ala Thr	
20 25 30	
Ser Ser Phe Arg Glu Lys Ser Arg Ala Thr Ile Gln Arg Phe Ser Ser	
35 40 45	
Leu Arg Arg Glu His Ile Lys Val Asp His Pro Asp Lys Phe Leu Glu	
50 55 60	
Leu Lys Arg Glu Ile Tyr Glu Ile Ile Gln Lys Ser Ser Ser Ile Asp	
65 70 75 80	
Val Asp Lys Arg Thr Lys Leu Met Ser Asn Ile Lys Thr Met Met Ile	
85 90 95	
Asn Pro Phe Met Ile Glu Gly Leu Met Thr Ser Leu Glu Asn Leu Asp	
100 105 110	
Pro Asp Asn Lys Met Ser Tyr Ser Ser Val Met Ile Leu Gly Glu Phe	
115 120 125	
Asp Ile Ile Asn Ile Ser Asp Asn Glu Ala Ala Phe Glu Phe Ile Asn	
130 135 140	
Ser Leu Leu Lys Ser Leu Leu Leu Leu Asn Thr Arg Gln Leu Lys Leu	
145 150 155 160	
Leu Glu Tyr Ser Ile Ser Asn Asp Leu Leu Tyr Ala His Ile Asn Ala	
165 170 175	
Leu Glu Tyr Ile Ile Lys Asn Thr Phe Asn Val Pro Glu Arg Gln Leu	
180 185 190	
Ile Leu Arg Gly Gln Tyr Leu Thr Pro Ile Phe Ser Asp Leu Leu Lys	
195 200 205	
Tyr Ala Gly Leu Thr Ile Lys Ser Asn Ile Leu Met Trp Asn Lys Gln	
210 215 220	
Phe Ile Lys Pro Val Ser Asp Leu Tyr Thr Ser Ile Arg Leu Leu Tyr	
225 230 235 240	
Cys Val Thr Val	

<210> 363
 <211> 612
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(612)

<400> 363

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atg tct cgt ggg gca tta atc gtt ttt gaa gga ttg gac aaa tct gga 48
Met Ser Arg Gly Ala Leu Ile Val Phe Glu Gly Leu Asp Lys Ser Gly
  1           5           10           15

aaa aca aca caa tgt atg aac atc atg gaa tct ata ccg gca aac acg 96
Lys Thr Thr Gln Cys Met Asn Ile Met Glu Ser Ile Pro Ala Asn Thr
          20           25           30

ata aaa tat ctt aac ttt cct cag aga tcc act gtc act gga aag atg 144
Ile Lys Tyr Leu Asn Phe Pro Gln Arg Ser Thr Val Thr Gly Lys Met
          35           40           45

ata gat gac tat cta act cgt aaa aaa acc tat aat gat cat ata gtt 192
Ile Asp Asp Tyr Leu Thr Arg Lys Lys Thr Tyr Asn Asp His Ile Val
          50           55           60

aat cta tta ttt tgt gca aat aga tgg gag ttt gca tct ttt ata caa 240
Asn Leu Leu Phe Cys Ala Asn Arg Trp Glu Phe Ala Ser Phe Ile Gln
          65           70           75           80

gaa caa cta gaa cag gga att act tta ata gtt gat aga tac gca ttc 288
Glu Gln Leu Glu Gln Gly Ile Thr Leu Ile Val Asp Arg Tyr Ala Phe
          85           90           95

tct gga gta gcg tat gcc gcc gct aaa ggc gcg tca atg act ctc agt 336
Ser Gly Val Ala Tyr Ala Ala Ala Lys Gly Ala Ser Met Thr Leu Ser
          100           105           110

aag agt tat gaa tct gga ttg cct aaa ccc gac tta gtt ata ttc ttg 384
Lys Ser Tyr Glu Ser Gly Leu Pro Lys Pro Asp Leu Val Ile Phe Leu
          115           120           125

gaa tct ggt agc aaa gaa att aat aga aac gtc ggc gag gaa att tat 432
Glu Ser Gly Ser Lys Glu Ile Asn Arg Asn Val Gly Glu Glu Ile Tyr
          130           135           140

gaa gat gtt aca ttc caa caa aag gta tta caa gaa tat aaa aaa atg 480
Glu Asp Val Thr Phe Gln Gln Lys Val Leu Gln Glu Tyr Lys Lys Met
          145           150           155           160

att gaa gaa gga gat att cat tgg caa att att tct tct gaa ttc gag 528
Ile Glu Glu Gly Asp Ile His Trp Gln Ile Ile Ser Ser Glu Phe Glu
          165           170           175

gaa gat gta aag aag gag ttg att aag aat ata gtt ata gag gct ata 576
Glu Asp Val Lys Lys Glu Leu Ile Lys Asn Ile Val Ile Glu Ala Ile
          180           185           190

cac acg gtt act gga cca gtg ggg caa ctg tgg atg 612
His Thr Val Thr Gly Pro Val Gly Gln Leu Trp Met
          195           200
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<210> 364

<211> 204

<212> PRT

<213> vaccinia virus

<400> 364

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Met Ser Arg Gly Ala Leu Ile Val Phe Glu Gly Leu Asp Lys Ser Gly
 1          5          10          15
Lys Thr Thr Gln Cys Met Asn Ile Met Glu Ser Ile Pro Ala Asn Thr
 20          25          30
Ile Lys Tyr Leu Asn Phe Pro Gln Arg Ser Thr Val Thr Gly Lys Met
 35          40          45
Ile Asp Asp Tyr Leu Thr Arg Lys Lys Thr Tyr Asn Asp His Ile Val
 50          55          60
Asn Leu Leu Phe Cys Ala Asn Arg Trp Glu Phe Ala Ser Phe Ile Gln
 65          70          75          80
Glu Gln Leu Glu Gln Gly Ile Thr Leu Ile Val Asp Arg Tyr Ala Phe
 85          90          95
Ser Gly Val Ala Tyr Ala Ala Ala Lys Gly Ala Ser Met Thr Leu Ser
100          105          110
Lys Ser Tyr Glu Ser Gly Leu Pro Lys Pro Asp Leu Val Ile Phe Leu
115          120          125
Glu Ser Gly Ser Lys Glu Ile Asn Arg Asn Val Gly Glu Glu Ile Tyr
130          135          140
Glu Asp Val Thr Phe Gln Gln Lys Val Leu Gln Glu Tyr Lys Lys Met
145          150          155          160
Ile Glu Glu Gly Asp Ile His Trp Gln Ile Ile Ser Ser Glu Phe Glu
165          170          175
Glu Asp Val Lys Lys Glu Leu Ile Lys Asn Ile Val Ile Glu Ala Ile
180          185          190
His Thr Val Thr Gly Pro Val Gly Gln Leu Trp Met
195          200

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<210> 365

<211> 489

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(489)

<400> 365

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atg gat gaa gca tat tac tct ggc aac ttg gaa tca gta ctc gga tac      48
Met Asp Glu Ala Tyr Ser Gly Asn Leu Glu Ser Val Leu Gly Tyr
 1          5          10          15

gtg tcc gat atg cat acc gaa ctc gca tca ata tct caa tta gtt att      96
Val Ser Asp Met His Thr Glu Leu Ala Ser Ile Ser Gln Leu Val Ile
 20          25          30

gcc aag ata gaa act ata gat aat gat ata tta aac aag gac att gta      144
Ala Lys Ile Glu Thr Ile Asp Asn Asp Ile Leu Asn Lys Asp Ile Val
 35          40          45

aat ttt atc atg tgt aga tca aac ttg gat aat cca ttt atc tct ttc      192
Asn Phe Ile Met Cys Arg Ser Asn Leu Asp Asn Pro Phe Ile Ser Phe
 50          55          60

cta gat act gta tat act att ata gat caa gag atc tat cag acc gaa      240
Leu Asp Thr Val Tyr Thr Ile Ile Asp Gln Glu Ile Tyr Gln Thr Glu
 65          70          75          80

```

ttg att aat tca tta gac gac aat gaa att atc gat tgt ata gtt aat	288
Leu Ile Asn Ser Leu Asp Asp Asn Glu Ile Ile Asp Cys Ile Val Asn	
85 90 95	
aag ttt atg agc ttt tat aag gat aac cta gaa aat ata gta gat gct	336
Lys Phe Met Ser Phe Tyr Lys Asp Asn Leu Glu Asn Ile Val Asp Ala	
100 105 110	
atc att act cta aaa tat ata atg aat aat cca gat ttt aaa act acg	384
Ile Ile Thr Leu Lys Tyr Ile Met Asn Asn Pro Asp Phe Lys Thr Thr	
115 120 125	
tat gca gaa gta ctc ggt tcc aga ata gcg gat ata gat att aaa caa	432
Tyr Ala Glu Val Leu Gly Ser Arg Ile Ala Asp Ile Asp Ile Lys Gln	
130 135 140	
gtg ata cgt gag aat ata cta caa ttg tct aat aat atc cgc gaa cga	480
Val Ile Arg Glu Asn Ile Leu Gln Leu Ser Asn Asn Ile Arg Glu Arg	
145 150 155 160	
tat ttg tga	489
Tyr Leu *	

<210> 366
 <211> 162
 <212> PRT
 <213> vaccinia virus

<400> 366
Met Asp Glu Ala Tyr Tyr Ser Gly Asn Leu Glu Ser Val Leu Gly Tyr
1 5 10 15
Val Ser Asp Met His Thr Glu Leu Ala Ser Ile Ser Gln Leu Val Ile
20 25 30
Ala Lys Ile Glu Thr Ile Asp Asn Asp Ile Leu Asn Lys Asp Ile Val
35 40 45
Asn Phe Ile Met Cys Arg Ser Asn Leu Asp Asn Pro Phe Ile Ser Phe
50 55 60
Leu Asp Thr Val Tyr Thr Ile Ile Asp Gln Glu Ile Tyr Gln Thr Glu
65 70 75 80
Leu Ile Asn Ser Leu Asp Asp Asn Glu Ile Ile Asp Cys Ile Val Asn
85 90 95
Lys Phe Met Ser Phe Tyr Lys Asp Asn Leu Glu Asn Ile Val Asp Ala
100 105 110
Ile Ile Thr Leu Lys Tyr Ile Met Asn Asn Pro Asp Phe Lys Thr Thr
115 120 125
Tyr Ala Glu Val Leu Gly Ser Arg Ile Ala Asp Ile Asp Ile Lys Gln
130 135 140
Val Ile Arg Glu Asn Ile Leu Gln Leu Ser Asn Asn Ile Arg Glu Arg
145 150 155 160
Tyr Leu

<210> 367
 <211> 1659
 <212> DNA
 <213> vaccinia virus

<220>

<221> CDS

<222> (1)...(1659)

<400> 367

atg acg tct ttt cgt gaa ttt aga aaa tta tgc tgt gct ata tat cac	48
Met Thr Ser Phe Arg Glu Phe Arg Lys Leu Cys Cys Ala Ile Tyr His	
1 5 10 15	
gca tca gga tat aaa gaa aaa tct aaa tta att aga gac ttt ata aca	96
Ala Ser Gly Tyr Lys Glu Lys Ser Lys Leu Ile Arg Asp Phe Ile Thr	
20 25 30	
gat agg gat gat aaa tat ttg atc att aag cta ttg ctt ccc gga tta	144
Asp Arg Asp Asp Lys Tyr Leu Ile Ile Lys Leu Leu Leu Pro Gly Leu	
35 40 45	
gac gat aga att tat aac atg aac gat aaa caa att ata aaa tta tat	192
Asp Asp Arg Ile Tyr Asn Met Asn Asp Lys Gln Ile Ile Lys Leu Tyr	
50 55 60	
agt ata ata ttt aaa caa tct cag gaa gat atg cta caa gat tta gga	240
Ser Ile Ile Phe Lys Gln Ser Gln Glu Asp Met Leu Gln Asp Leu Gly	
65 70 75 80	
tac gga tat ata gga gac act att agt aca ttc ttc aaa gaa aac aca	288
Tyr Gly Tyr Ile Gly Asp Thr Ile Ser Thr Phe Phe Lys Glu Asn Thr	
85 90 95	
gaa atc cgt cca aga gat aaa agc att tta act tta gaa gac gtg gat	336
Glu Ile Arg Pro Arg Asp Lys Ser Ile Leu Thr Leu Glu Asp Val Asp	
100 105 110	
agt ttc tta act acg tta tca tcc gta act aaa gaa ttg cat caa ata	384
Ser Phe Leu Thr Thr Leu Ser Ser Val Thr Lys Glu Leu His Gln Ile	
115 120 125	
aaa tta ttg act gat gta gca tct gtt tgt aca tgt aat gat tta aaa	432
Lys Leu Leu Thr Asp Val Ala Ser Val Cys Thr Cys Asn Asp Leu Lys	
130 135 140	
tgt gta gtc atg ctt att gat aaa gat cta aaa att aaa gcg ggc cct	480
Cys Val Val Met Leu Ile Asp Lys Asp Leu Lys Ile Lys Ala Gly Pro	
145 150 155 160	
cgg tac gta ctt aac gct att agt cct cat gcc tat gat gtt ttt aga	528
Arg Tyr Val Leu Asn Ala Ile Ser Pro His Ala Tyr Asp Val Phe Arg	
165 170 175	
aaa tct aat aac ttg aaa gag ata ata gaa aat gca tct aaa caa aat	576
Lys Ser Asn Asn Leu Lys Glu Ile Ile Glu Asn Ala Ser Lys Gln Asn	
180 185 190	
cta gac tct ata tct att tct gtt atg act cca att aat ccc atg tta	624
Leu Asp Ser Ile Ser Ile Ser Val Met Thr Pro Ile Asn Pro Met Leu	
195 200 205	
gcg gaa tcg tgt gat tct gtc aat aag gcg ttt aaa aaa ttt cca tca	672
Ala Glu Ser Cys Asp Ser Val Asn Lys Ala Phe Lys Lys Phe Pro Ser	

210	215	220	
gga atg ttt gcg gaa gtt aaa tac gat ggt gaa aga gta caa gtt cat			720
Gly Met Phe Ala Glu Val Lys Tyr Asp Gly Glu Arg Val Gln Val His			
225	230	235	240
aaa aat aat aac gag ttt gcc ttc ttt agt aga aac atg aaa cca gta			768
Lys Asn Asn Asn Glu Phe Ala Phe Phe Ser Arg Asn Met Lys Pro Val			
	245	250	255
ctc tct cat aaa gtg gat tat ctc aaa gaa tac ata ccg aaa gca ttt			816
Leu Ser His Lys Val Asp Tyr Leu Lys Glu Tyr Ile Pro Lys Ala Phe			
	260	265	270
aaa aaa gct acg tct atc gta ttg gat tct gaa att gtt ctt gta gac			864
Lys Lys Lys Thr Ser Ile Val Leu Asp Ser Glu Ile Val Leu Val Asp			
	275	280	285
gaa cat aat gta ccg ctc ccg ttt gga agt tta ggt ata cac aaa aag			912
Glu His Asn Val Pro Leu Pro Phe Gly Ser Leu Gly Ile His Lys Lys			
	290	295	300
aaa gaa tat aaa aac tct aac atg tgt ttg ttc gtg ttt gac tgt ttg			960
Lys Glu Tyr Lys Asn Ser Asn Met Cys Leu Phe Val Phe Asp Cys Leu			
	305	310	320
tac ttt gat gga ttc gat atg acg gac att cca ttg tac gaa cga aga			1008
Tyr Phe Asp Gly Phe Asp Met Thr Asp Ile Pro Leu Tyr Glu Arg Arg			
	325	330	335
tct ttt ctc aaa gat gtt atg gtt gaa ata ccc aat aga ata gta ttc			1056
Ser Phe Leu Lys Asp Val Met Val Glu Ile Pro Asn Arg Ile Val Phe			
	340	345	350
tca gag ttg acg aat att agt aac gag tct cag tta act gac gta ttg			1104
Ser Glu Leu Thr Asn Ile Ser Asn Glu Ser Gln Leu Thr Asp Val Leu			
	355	360	365
gat gat gca cta acg aga aaa tta gaa gga ttg gtc tta aaa gat att			1152
Asp Asp Ala Leu Thr Arg Lys Leu Glu Gly Leu Val Leu Lys Asp Ile			
	370	375	380
aat gga gta tac gaa ccg gga aag aga aga tgg tta aaa ata aag cga			1200
Asn Gly Val Tyr Glu Pro Gly Lys Arg Arg Trp Leu Lys Ile Lys Arg			
	385	390	400
gac tat ttg aac gag ggt tcc atg gca gat tct gcc gat tta gta gta			1248
Asp Tyr Leu Asn Glu Gly Ser Met Ala Asp Ser Ala Asp Leu Val Val			
	405	410	415
cta ggt gct tac tat ggt aaa gga gca aag ggt ggt atc atg gca gtc			1296
Leu Gly Ala Tyr Tyr Gly Lys Gly Ala Lys Gly Gly Ile Met Ala Val			
	420	425	430
ttt cta atg ggt tgt tac gac gat aaa tcc ggt aaa tgg aag acg gtt			1344
Phe Leu Met Gly Cys Tyr Asp Asp Lys Ser Gly Lys Trp Lys Thr Val			
	435	440	445
acc aag tgt tca gga cac gat gat aat acg tta agg gag ttg caa gac			1392

Thr	Lys	Cys	Ser	Gly	His	Asp	Asp	Asn	Thr	Leu	Arg	Glu	Leu	Gln	Asp		
450						455					460						
caa	tta	aag	atg	att	aaa	att	aac	aag	gat	ccc	aaa	aaa	att	cca	gag	1440	
Gln	Leu	Lys	Met	Ile	Lys	Ile	Asn	Lys	Asp	Pro	Lys	Lys	Ile	Pro	Glu		
465					470				475						480		
tgg	ttg	gta	gtt	aat	aaa	atc	tat	att	ccc	gat	ttt	gta	gta	gag	gat	1488	
Trp	Leu	Val	Val	Asn	Lys	Ile	Tyr	Ile	Pro	Asp	Phe	Val	Val	Glu	Asp		
				485					490					495			
cca	aaa	caa	tct	cag	ata	tgg	gaa	att	tca	gga	gca	gag	ttt	aca	tct	1536	
Pro	Lys	Gln	Ser	Gln	Ile	Trp	Glu	Ile	Ser	Gly	Ala	Glu	Phe	Thr	Ser		
			500					505					510				
tcc	aag	tca	cat	aca	gcg	aat	gga	ata	tcg	att	aga	ttt	cct	aga	ttt	1584	
Ser	Lys	Ser	His	Thr	Ala	Asn	Gly	Ile	Ser	Ile	Arg	Phe	Pro	Arg	Phe		
		515					520					525					
act	agg	ata	aga	gag	gat	aaa	acg	tgg	aaa	gaa	tct	act	cat	cta	aac	1632	
Thr	Arg	Ile	Arg	Glu	Asp	Lys	Thr	Trp	Lys	Glu	Ser	Thr	His	Leu	Asn		
	530					535					540						
gat	tta	gta	aac	ttg	act	aaa	tct	taa								1659	
Asp	Leu	Val	Asn	Leu	Thr	Lys	Ser	*									
545					550												

<210> 368
 <211> 552
 <212> PRT
 <213> vaccinia virus

<400> 368																	
Met	Thr	Ser	Phe	Arg	Glu	Phe	Arg	Lys	Leu	Cys	Cys	Ala	Ile	Tyr	His		
1				5					10					15			
Ala	Ser	Gly	Tyr	Lys	Glu	Lys	Ser	Lys	Leu	Ile	Arg	Asp	Phe	Ile	Thr		
		20						25					30				
Asp	Arg	Asp	Asp	Lys	Tyr	Leu	Ile	Lys	Leu	Leu	Leu	Pro	Gly	Leu			
		35					40					45					
Asp	Asp	Arg	Ile	Tyr	Asn	Met	Asn	Asp	Lys	Gln	Ile	Ile	Lys	Leu	Tyr		
		50				55					60						
Ser	Ile	Ile	Phe	Lys	Gln	Ser	Gln	Glu	Asp	Met	Leu	Gln	Asp	Leu	Gly		
65				70					75						80		
Tyr	Gly	Tyr	Ile	Gly	Asp	Thr	Ile	Ser	Thr	Phe	Phe	Lys	Glu	Asn	Thr		
			85						90					95			
Glu	Ile	Arg	Pro	Arg	Asp	Lys	Ser	Ile	Leu	Thr	Leu	Glu	Asp	Val	Asp		
			100					105					110				
Ser	Phe	Leu	Thr	Thr	Leu	Ser	Ser	Val	Thr	Lys	Glu	Leu	His	Gln	Ile		
		115						120				125					
Lys	Leu	Leu	Thr	Asp	Val	Ala	Ser	Val	Cys	Thr	Cys	Asn	Asp	Leu	Lys		
		130				135					140						
Cys	Val	Val	Met	Leu	Ile	Asp	Lys	Asp	Leu	Lys	Ile	Lys	Ala	Gly	Pro		
145				150					155					160			
Arg	Tyr	Val	Leu	Asn	Ala	Ile	Ser	Pro	His	Ala	Tyr	Asp	Val	Phe	Arg		
			165					170						175			
Lys	Ser	Asn	Asn	Leu	Lys	Glu	Ile	Ile	Glu	Asn	Ala	Ser	Lys	Gln	Asn		
		180						185					190				
Leu	Asp	Ser	Ile	Ser	Ile	Ser	Val	Met	Thr	Pro	Ile	Asn	Pro	Met	Leu		

		195					200				205						
Ala	Glu	Ser	Cys	Asp	Ser	Val	Asn	Lys	Ala	Phe	Lys	Lys	Phe	Pro	Ser		
	210						215				220						
Gly	Met	Phe	Ala	Glu	Val	Lys	Tyr	Asp	Gly	Glu	Arg	Val	Gln	Val	His		
225					230					235					240		
Lys	Asn	Asn	Asn	Glu	Phe	Ala	Phe	Phe	Ser	Arg	Asn	Met	Lys	Pro	Val		
				245					250					255			
Leu	Ser	His	Lys	Val	Asp	Tyr	Leu	Lys	Glu	Tyr	Ile	Pro	Lys	Ala	Phe		
			260					265					270				
Lys	Lys	Ala	Thr	Ser	Ile	Val	Leu	Asp	Ser	Glu	Ile	Val	Leu	Val	Asp		
		275					280					285					
Glu	His	Asn	Val	Pro	Leu	Pro	Phe	Gly	Ser	Leu	Gly	Ile	His	Lys	Lys		
	290					295					300						
Lys	Glu	Tyr	Lys	Asn	Ser	Asn	Met	Cys	Leu	Phe	Val	Phe	Asp	Cys	Leu		
305					310					315					320		
Tyr	Phe	Asp	Gly	Phe	Asp	Met	Thr	Asp	Ile	Pro	Leu	Tyr	Glu	Arg	Arg		
				325					330					335			
Ser	Phe	Leu	Lys	Asp	Val	Met	Val	Glu	Ile	Pro	Asn	Arg	Ile	Val	Phe		
			340					345					350				
Ser	Glu	Leu	Thr	Asn	Ile	Ser	Asn	Glu	Ser	Gln	Leu	Thr	Asp	Val	Leu		
		355					360					365					
Asp	Asp	Ala	Leu	Thr	Arg	Lys	Leu	Glu	Gly	Leu	Val	Leu	Lys	Asp	Ile		
	370					375					380						
Asn	Gly	Val	Tyr	Glu	Pro	Gly	Lys	Arg	Arg	Trp	Leu	Lys	Ile	Lys	Arg		
385					390					395					400		
Asp	Tyr	Leu	Asn	Glu	Gly	Ser	Met	Ala	Asp	Ser	Ala	Asp	Leu	Val	Val		
				405					410					415			
Leu	Gly	Ala	Tyr	Tyr	Gly	Lys	Gly	Ala	Lys	Gly	Gly	Ile	Met	Ala	Val		
			420					425					430				
Phe	Leu	Met	Gly	Cys	Tyr	Asp	Asp	Lys	Ser	Gly	Lys	Trp	Lys	Thr	Val		
		435					440					445					
Thr	Lys	Cys	Ser	Gly	His	Asp	Asp	Asn	Thr	Leu	Arg	Glu	Leu	Gln	Asp		
	450					455					460						
Gln	Leu	Lys	Met	Ile	Lys	Ile	Asn	Lys	Asp	Pro	Lys	Lys	Ile	Pro	Glu		
465					470					475					480		
Trp	Leu	Val	Val	Asn	Lys	Ile	Tyr	Ile	Pro	Asp	Phe	Val	Val	Glu	Asp		
				485					490					495			
Pro	Lys	Gln	Ser	Gln	Ile	Trp	Glu	Ile	Ser	Gly	Ala	Glu	Phe	Thr	Ser		
			500					505					510				
Ser	Lys	Ser	His	Thr	Ala	Asn	Gly	Ile	Ser	Ile	Arg	Phe	Pro	Arg	Phe		
		515					520					525					
Thr	Arg	Ile	Arg	Glu	Asp	Lys	Thr	Trp	Lys	Glu	Ser	Thr	His	Leu	Asn		
	530					535					540						
Asp	Leu	Val	Asn	Leu	Thr	Lys	Ser										
545					550												

<210> 369
 <211> 210
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(210)

<400> 369
 atg gat ggt gtt att gta tac tgt cta aac gcg tta gta aaa cat ggc 48
 Met Asp Gly Val Ile Val Tyr Cys Leu Asn Ala Leu Val Lys His Gly

1	5	10	15	
gag gaa ata aat cat ata aaa aat gat ttc atg att aaa cca tgt tgt				96
Glu Glu Ile Asn His Ile Lys Asn Asp Phe Met Ile Lys Pro Cys Cys				
	20	25	30	
gaa aaa gtt aag aac gtt cac atc gac gga caa tct aaa aac aat aca				144
Glu Lys Val Lys Asn Val His Ile Asp Gly Gln Ser Lys Asn Asn Thr				
	35	40	45	
gtg att gca gat ttg cca tat ctg gat aat gct gta tcg gat gta tgc				192
Val Ile Ala Asp Leu Pro Tyr Leu Asp Asn Ala Val Ser Asp Val Cys				
	50	55	60	
aaa tcg ata tat ata tag				210
Lys Ser Ile Tyr Ile *				
	65			

<210> 370
 <211> 69
 <212> PRT
 <213> vaccinia virus

1	5	10	15
Met Asp Gly Val Ile Val Tyr Cys Leu Asn Ala Leu Val Lys His Gly			
Glu Glu Ile Asn His Ile Lys Asn Asp Phe Met Ile Lys Pro Cys Cys			
	20	25	30
Glu Lys Val Lys Asn Val His Ile Asp Gly Gln Ser Lys Asn Asn Thr			
	35	40	45
Val Ile Ala Asp Leu Pro Tyr Leu Asp Asn Ala Val Ser Asp Val Cys			
	50	55	60
Lys Ser Ile Tyr Ile			
	65		

<210> 371
 <211> 801
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(801)

1	5	10	15	
atg caa atc gat ata tat ata gta tca aga ata tcc aga ttt gct aat				48
Met Gln Ile Asp Ile Tyr Ile Val Ser Arg Ile Ser Arg Phe Ala Asn				
	5	10	15	
ttg ata aag ata gat gac gat gac aag act cct act ggt gta tat aat				96
Leu Ile Lys Ile Asp Asp Asp Asp Lys Thr Pro Thr Gly Val Tyr Asn				
	20	25	30	
tat ttt aaa cct aaa gat gcc att cct gtt att ata tcc ata gga aag				144
Tyr Phe Lys Pro Lys Asp Ala Ile Pro Val Ile Ile Ser Ile Gly Lys				
	35	40	45	

gat	aga	gat	gtt	tgt	gaa	cta	tta	atc	tca	tct	gat	aaa	gcg	tgt	gcg	192
Asp	Arg	Asp	Val	Cys	Glu	Leu	Leu	Ile	Ser	Ser	Asp	Lys	Ala	Cys	Ala	
	50					55					60					
tgt	ata	gag	tta	aat	tca	tat	aaa	gta	gcc	att	ctt	ccc	atg	gat	gtt	240
Cys	Ile	Glu	Leu	Asn	Ser	Tyr	Lys	Val	Ala	Ile	Leu	Pro	Met	Asp	Val	
	65				70					75					80	
tcc	ttt	ttt	acc	aaa	gga	aat	gca	tca	ttg	att	att	ctc	ctg	ttt	gat	288
Ser	Phe	Phe	Thr	Lys	Gly	Asn	Ala	Ser	Leu	Ile	Ile	Leu	Leu	Phe	Asp	
				85					90					95		
ttc	tct	atc	gat	gcg	gca	cct	ctc	tta	aga	agt	gta	acc	gat	aat	aat	336
Phe	Ser	Ile	Asp	Ala	Ala	Pro	Leu	Leu	Arg	Ser	Val	Thr	Asp	Asn	Asn	
			100					105					110			
gtt	att	ata	tct	aga	cac	cag	cgt	cta	cat	gac	gag	ctt	ccg	agt	tcc	384
Val	Ile	Ile	Ser	Arg	His	Gln	Arg	Leu	His	Asp	Glu	Leu	Pro	Ser	Ser	
	115						120					125				
aat	tgg	ttc	aag	ttt	tac	ata	agt	ata	aag	tcc	gac	tat	tgt	tct	ata	432
Asn	Trp	Phe	Lys	Phe	Tyr	Ile	Ser	Ile	Lys	Ser	Asp	Tyr	Cys	Ser	Ile	
	130					135					140					
tta	tat	atg	gtt	gtt	gat	gga	tct	gtg	atg	cat	gcg	ata	gct	gat	aat	480
Leu	Tyr	Met	Val	Val	Asp	Gly	Ser	Val	Met	His	Ala	Ile	Ala	Asp	Asn	
	145				150					155					160	
aga	act	tac	gca	aat	att	agc	aaa	aat	ata	tta	gac	aat	act	aca	att	528
Arg	Thr	Tyr	Ala	Asn	Ile	Ser	Lys	Asn	Ile	Leu	Asp	Asn	Thr	Thr	Ile	
				165					170					175		
aac	gat	gag	tgt	aga	tgc	tgt	tat	ttt	gaa	cca	cag	att	agg	att	ctt	576
Asn	Asp	Glu	Cys	Arg	Cys	Cys	Tyr	Phe	Glu	Pro	Gln	Ile	Arg	Ile	Leu	
			180					185					190			
gat	aga	gat	gag	atg	ctc	aat	gga	tca	tcg	tgt	gat	atg	aac	aga	cat	624
Asp	Arg	Asp	Glu	Met	Leu	Asn	Gly	Ser	Ser	Cys	Asp	Met	Asn	Arg	His	
		195					200					205				
tgt	att	atg	atg	aat	tta	cct	gat	gta	ggc	aaa	ttt	gga	tct	agt	atg	672
Cys	Ile	Met	Met	Asn	Leu	Pro	Asp	Val	Gly	Lys	Phe	Gly	Ser	Ser	Met	
	210					215					220					
ttg	ggg	aaa	tat	gaa	cct	gac	atg	att	aag	att	gct	ctt	ttg	gtg	gct	720
Leu	Gly	Lys	Tyr	Glu	Pro	Asp	Met	Ile	Lys	Ile	Ala	Leu	Leu	Val	Ala	
	225				230					235					240	
ggt	aat	tta	ata	aga	aat	cga	gac	tac	att	ccc	ggg	aga	cga	gga	tat	768
Gly	Asn	Leu	Ile	Arg	Asn	Arg	Asp	Tyr	Ile	Pro	Gly	Arg	Arg	Gly	Tyr	
				245					250					255		
agc	tac	tac	gtt	tac	ggt	ata	gcc	tct	aga	taa						801
Ser	Tyr	Tyr	Val	Tyr	Gly	Ile	Ala	Ser	Arg	*						
			260					265								

<210> 372

<211> 266

<212> PRT
 <213> vaccinia virus

<400> 372

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Met Gln Ile Asp Ile Tyr Ile Val Ser Arg Ile Ser Arg Phe Ala Asn
 1           5           10           15
Leu Ile Lys Ile Asp Asp Asp Asp Lys Thr Pro Thr Gly Val Tyr Asn
           20           25           30
Tyr Phe Lys Pro Lys Asp Ala Ile Pro Val Ile Ile Ser Ile Gly Lys
           35           40           45
Asp Arg Asp Val Cys Glu Leu Leu Ile Ser Ser Asp Lys Ala Cys Ala
           50           55           60
Cys Ile Glu Leu Asn Ser Tyr Lys Val Ala Ile Leu Pro Met Asp Val
65           70           75           80
Ser Phe Phe Thr Lys Gly Asn Ala Ser Leu Ile Ile Leu Leu Phe Asp
           85           90           95
Phe Ser Ile Asp Ala Ala Pro Leu Leu Arg Ser Val Thr Asp Asn Asn
           100          105          110
Val Ile Ile Ser Arg His Gln Arg Leu His Asp Glu Leu Pro Ser Ser
           115          120          125
Asn Trp Phe Lys Phe Tyr Ile Ser Ile Lys Ser Asp Tyr Cys Ser Ile
130          135          140
Leu Tyr Met Val Val Asp Gly Ser Val Met His Ala Ile Ala Asp Asn
145          150          155          160
Arg Thr Tyr Ala Asn Ile Ser Lys Asn Ile Leu Asp Asn Thr Thr Ile
           165          170          175
Asn Asp Glu Cys Arg Cys Cys Tyr Phe Glu Pro Gln Ile Arg Ile Leu
           180          185          190
Asp Arg Asp Glu Met Leu Asn Gly Ser Ser Cys Asp Met Asn Arg His
           195          200          205
Cys Ile Met Met Asn Leu Pro Asp Val Gly Lys Phe Gly Ser Ser Met
210          215          220
Leu Gly Lys Tyr Glu Pro Asp Met Ile Lys Ile Ala Leu Leu Val Ala
225          230          235          240
Gly Asn Leu Ile Arg Asn Arg Asp Tyr Ile Pro Gly Arg Arg Gly Tyr
           245          250          255
Ser Tyr Tyr Val Tyr Gly Ile Ala Ser Arg
           260          265

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<210> 373
 <211> 573
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(573)

<400> 373

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atg gac ata aag ata gat att agt att ttt ggt gat aaa ttt acg gtg   48
Met Asp Ile Lys Ile Asp Ile Ser Ile Phe Gly Asp Lys Phe Thr Val
 1           5           10           15

act act agg agg gaa aat gaa gaa aaa aaa aaa tat cta cct ctc caa   96
Thr Thr Arg Arg Glu Asn Glu Glu Lys Lys Lys Tyr Leu Pro Leu Gln
           20           25           30

aaa gaa aaa act act gat gtt atc aaa cct gat tat ctt gag tac gat   144

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Lys	Glu	Lys	Thr	Thr	Asp	Val	Ile	Lys	Pro	Asp	Tyr	Leu	Glu	Tyr	Asp		
		35					40					45					
gac	ttg	tta	gat	aga	gat	gag	atg	ttt	act	att	cta	gag	gaa	tat	ttt	192	
Asp	Leu	Leu	Asp	Arg	Asp	Glu	Met	Phe	Thr	Ile	Leu	Glu	Glu	Tyr	Phe		
	50					55					60						
atg	tac	aga	ggt	cta	tta	ggc	ctc	aga	ata	aaa	tat	gga	cga	ctc	ttt	240	
Met	Tyr	Arg	Gly	Leu	Leu	Gly	Leu	Arg	Ile	Lys	Tyr	Gly	Arg	Leu	Phe		
	65				70					75					80		
aac	gaa	att	aaa	aaa	ttc	gac	aat	gat	gcg	gaa	gaa	caa	ttc	ggt	act	288	
Asn	Glu	Ile	Lys	Lys	Phe	Asp	Asn	Asp	Ala	Glu	Glu	Gln	Phe	Gly	Thr		
			85						90					95			
ata	gaa	gaa	ctc	aag	cag	aaa	ctt	aga	tta	aat	tct	gaa	gag	gga	gca	336	
Ile	Glu	Glu	Leu	Lys	Gln	Lys	Leu	Arg	Leu	Asn	Ser	Glu	Glu	Gly	Ala		
			100					105						110			
gat	aac	ttt	ata	gat	tat	ata	aag	gta	caa	aaa	cag	gat	atc	gtc	aaa	384	
Asp	Asn	Phe	Ile	Asp	Tyr	Ile	Lys	Val	Gln	Lys	Gln	Asp	Ile	Val	Lys		
		115					120					125					
ctt	act	gta	tac	gat	tgc	ata	tct	atg	ata	gga	ttg	tgt	gca	tgc	gtg	432	
Leu	Thr	Val	Tyr	Asp	Cys	Ile	Ser	Met	Ile	Gly	Leu	Cys	Ala	Cys	Val		
		130				135						140					
gta	gat	gtt	tgg	aga	aat	gag	aaa	ctg	ttt	tct	aga	tgg	aaa	tat	tgt	480	
Val	Asp	Val	Trp	Arg	Asn	Glu	Lys	Leu	Phe	Ser	Arg	Trp	Lys	Tyr	Cys		
	145				150					155					160		
tta	cga	gcg	att	aaa	ctg	ttt	att	aat	gat	cac	atg	ctt	gat	aag	ata	528	
Leu	Arg	Ala	Ile	Lys	Leu	Phe	Ile	Asn	Asp	His	Met	Leu	Asp	Lys	Ile		
				165					170					175			
aaa	tct	ata	ctg	cag	aat	aga	cta	gtg	tat	gtg	gaa	atg	tca	tag		573	
Lys	Ser	Ile	Leu	Gln	Asn	Arg	Leu	Val	Tyr	Val	Glu	Met	Ser	*			
			180					185					190				

<210> 374
 <211> 190
 <212> PRT
 <213> vaccinia virus

<400> 374

Met	Asp	Ile	Lys	Ile	Asp	Ile	Ser	Ile	Phe	Gly	Asp	Lys	Phe	Thr	Val		
1				5					10					15			
Thr	Thr	Arg	Arg	Glu	Asn	Glu	Glu	Lys	Lys	Lys	Tyr	Leu	Pro	Leu	Gln		
			20					25					30				
Lys	Glu	Lys	Thr	Thr	Asp	Val	Ile	Lys	Pro	Asp	Tyr	Leu	Glu	Tyr	Asp		
		35					40					45					
Asp	Leu	Leu	Asp	Arg	Asp	Glu	Met	Phe	Thr	Ile	Leu	Glu	Glu	Tyr	Phe		
	50					55					60						
Met	Tyr	Arg	Gly	Leu	Leu	Gly	Leu	Arg	Ile	Lys	Tyr	Gly	Arg	Leu	Phe		
	65				70					75				80			
Asn	Glu	Ile	Lys	Lys	Phe	Asp	Asn	Asp	Ala	Glu	Glu	Gln	Phe	Gly	Thr		
				85					90					95			

Ile	Glu	Glu	Leu	Lys	Gln	Lys	Leu	Arg	Leu	Asn	Ser	Glu	Glu	Gly	Ala	
			100					105					110			
Asp	Asn	Phe	Ile	Asp	Tyr	Ile	Lys	Val	Gln	Lys	Gln	Asp	Ile	Val	Lys	
		115					120					125				
Leu	Thr	Val	Tyr	Asp	Cys	Ile	Ser	Met	Ile	Gly	Leu	Cys	Ala	Cys	Val	
	130				135					140						
Val	Asp	Val	Trp	Arg	Asn	Glu	Lys	Leu	Phe	Ser	Arg	Trp	Lys	Tyr	Cys	
145					150					155					160	
Leu	Arg	Ala	Ile	Lys	Leu	Phe	Ile	Asn	Asp	His	Met	Leu	Asp	Lys	Ile	
			165					170						175		
Lys	Ser	Ile	Leu	Gln	Asn	Arg	Leu	Val	Tyr	Val	Glu	Met	Ser			
			180					185					190			

<210> 375
 <211> 111
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(111)

<400> 375																
atg	ttt	aaa	ggt	atc	aga	tta	aaa	tat	att	ttc	gaa	att	aat	agc	tgt	48
Met	Phe	Lys	Val	Ile	Arg	Leu	Lys	Tyr	Ile	Phe	Glu	Ile	Asn	Ser	Cys	
1				5					10					15		
ata	tct	cat	cca	tca	att	tta	gat	tta	tat	gtt	ttg	aaa	aac	act	atc	96
Ile	Ser	His	Pro	Ser	Ile	Leu	Asp	Leu	Tyr	Val	Leu	Lys	Asn	Thr	Ile	
			20					25					30			
tta	ctc	ata	ctc	tag												111
Leu	Leu	Ile	Leu	*												
			35													

<210> 376
 <211> 36
 <212> PRT
 <213> vaccinia virus

<400> 376															
Met	Phe	Lys	Val	Ile	Arg	Leu	Lys	Tyr	Ile	Phe	Glu	Ile	Asn	Ser	Cys
1				5					10					15	
Ile	Ser	His	Pro	Ser	Ile	Leu	Asp	Leu	Tyr	Val	Leu	Lys	Asn	Thr	Ile
			20					25					30		
Leu	Leu	Ile	Leu												
			35												

<210> 377
 <211> 399
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(399)

<400> 377

atg gat ata aag aat ttg ctg act gta tgt act att ttt tac att act	48
Met Asp Ile Lys Asn Leu Leu Thr Val Cys Thr Ile Phe Tyr Ile Thr	
1 5 10 15	
aca ttg gct acg gca gat ata cct act tcg tca ctg cca cac gct ccg	96
Thr Leu Ala Thr Ala Asp Ile Pro Thr Ser Ser Leu Pro His Ala Pro	
20 25 30	
gta aac ggg gca tgt gac gag gga gaa tat ctt gat aag agg cat aat	144
Val Asn Gly Ala Cys Asp Glu Gly Glu Tyr Leu Asp Lys Arg His Asn	
35 40 45	
caa tgt tgt aat cag tgt cca cct gga gaa ttt gcc aag gtc aga tgt	192
Gln Cys Cys Asn Gln Cys Pro Pro Gly Glu Phe Ala Lys Val Arg Cys	
50 55 60	
agt ggt agt gat aac aca aaa tgt gaa cgc tgc cca cct cat aca tat	240
Ser Gly Ser Asp Asn Thr Lys Cys Glu Arg Cys Pro Pro His Thr Tyr	
65 70 75 80	
acc gca atc ccc aat tac tct aat gga tgt cat caa tgt aga aaa tgc	288
Thr Ala Ile Pro Asn Tyr Ser Asn Gly Cys His Gln Cys Arg Lys Cys	
85 90 95	
cca aca gga tca ttt gat aag gta aag tgt acc gga aca cag aac agt	336
Pro Thr Gly Ser Phe Asp Lys Val Lys Cys Thr Gly Thr Gln Asn Ser	
100 105 110	
aaa tgt tcg tgt ctt cct ggt tgg tat tgc gct act gat tct tca cag	384
Lys Cys Ser Cys Leu Pro Gly Trp Tyr Cys Ala Thr Asp Ser Ser Gln	
115 120 125	
act gaa gat tgt tga	399
Thr Glu Asp Cys *	
130	

<210> 378
 <211> 132
 <212> PRT
 <213> vaccinia virus

<400> 378

Met Asp Ile Lys Asn Leu Leu Thr Val Cys Thr Ile Phe Tyr Ile Thr	
1 5 10 15	
Thr Leu Ala Thr Ala Asp Ile Pro Thr Ser Ser Leu Pro His Ala Pro	
20 25 30	
Val Asn Gly Ala Cys Asp Glu Gly Glu Tyr Leu Asp Lys Arg His Asn	
35 40 45	
Gln Cys Cys Asn Gln Cys Pro Pro Gly Glu Phe Ala Lys Val Arg Cys	
50 55 60	
Ser Gly Ser Asp Asn Thr Lys Cys Glu Arg Cys Pro Pro His Thr Tyr	
65 70 75 80	
Thr Ala Ile Pro Asn Tyr Ser Asn Gly Cys His Gln Cys Arg Lys Cys	
85 90 95	
Pro Thr Gly Ser Phe Asp Lys Val Lys Cys Thr Gly Thr Gln Asn Ser	
100 105 110	
Lys Cys Ser Cys Leu Pro Gly Trp Tyr Cys Ala Thr Asp Ser Ser Gln	

115
Thr Glu Asp Cys
130

120

125

<210> 379
<211> 1695
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(1695)

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<400> 379
atg aat agc agc agt aaa tta att gct gtt att aat gga ttt aga aat 48
Met Asn Ser Ser Ser Lys Leu Ile Ala Val Ile Asn Gly Phe Arg Asn
1 5 10 15

agt gga cga ttt tgt gat att aat ata gtt att aat gat gaa agg ata 96
Ser Gly Arg Phe Cys Asp Ile Asn Ile Val Ile Asn Asp Glu Arg Ile
20 25 30

aac gct cat aaa ctc atc cta tct gga gcc tcc gaa tat ttt tcc att 144
Asn Ala His Lys Leu Ile Leu Ser Gly Ala Ser Glu Tyr Phe Ser Ile
35 40 45

ctg ttt tcc aat aat ttt atc gat tct aat gaa tac gaa gtt aat cta 192
Leu Phe Ser Asn Asn Phe Ile Asp Ser Asn Glu Tyr Glu Val Asn Leu
50 55 60

agt cat tta gat tat caa agc gta aac gat ttg atc gat tat att tat 240
Ser His Leu Asp Tyr Gln Ser Val Asn Asp Leu Ile Asp Tyr Ile Tyr
65 70 75 80

ggg ata cct ttg agc cta act aac gat aac gtg aaa tat att ctt tca 288
Gly Ile Pro Leu Ser Leu Thr Asn Asp Asn Val Lys Tyr Ile Leu Ser
85 90 95

acc gct gat ttt tta caa att gga tct gct att acg gag tgt gaa aat 336
Thr Ala Asp Phe Leu Gln Ile Gly Ser Ala Ile Thr Glu Cys Glu Asn
100 105 110

tac ata ctt aaa aat ctt tgt tct aaa aac tgt atc gat ttc tac ata 384
Tyr Ile Leu Lys Asn Leu Cys Ser Lys Asn Cys Ile Asp Phe Tyr Ile
115 120 125

tac gct gat aaa tat aat aac aag aaa ata gaa tca gcg tcg ttt aac 432
Tyr Ala Asp Lys Tyr Asn Asn Lys Lys Ile Glu Ser Ala Ser Phe Asn
130 135 140

aca ata tta caa aat att ttg aga ctc atc aac gat gaa aac ttt aaa 480
Thr Ile Leu Gln Asn Ile Leu Arg Leu Ile Asn Asp Glu Asn Phe Lys
145 150 155 160

tac tta aca gag gaa tca atg ata aaa att tta agc gat gat atg tta 528
Tyr Leu Thr Glu Glu Ser Met Ile Lys Ile Leu Ser Asp Asp Met Leu
165 170 175

```

aat ata aaa aat gag gat ttc gcc cca cta att ctc att aaa tgg tta	576
Asn Ile Lys Asn Glu Asp Phe Ala Pro Leu Ile Leu Ile Lys Trp Leu	
180 185 190	
gag agt act caa caa tca tgc acc gtc gag tta ctt aaa tgc ctc aga	624
Glu Ser Thr Gln Gln Ser Cys Thr Val Glu Leu Leu Lys Cys Leu Arg	
195 200 205	
ata tca ttg ctt tcc cca caa gtt ata aaa tca ctt tat agt cat caa	672
Ile Ser Leu Leu Ser Pro Gln Val Ile Lys Ser Leu Tyr Ser His Gln	
210 215 220	
ctg gtt agt tca atc tac gaa tgt ata aca ttc tta aac aat ata gca	720
Leu Val Ser Ser Ile Tyr Glu Cys Ile Thr Phe Leu Asn Asn Ile Ala	
225 230 235 240	
ttc ttg gat gaa tca ttt cct aga tac cat agc atc gag ttg ata tct	768
Phe Leu Asp Glu Ser Phe Pro Arg Tyr His Ser Ile Glu Leu Ile Ser	
245 250 255	
atc ggt ata agt aat tcg cgt gat aaa att tcc ata aac tgc tac aat	816
Ile Gly Ile Ser Asn Ser Arg Asp Lys Ile Ser Ile Asn Cys Tyr Asn	
260 265 270	
cat aaa aaa aat aca tgg gaa atg ata tct tca cgt aga tat agg tgt	864
His Lys Lys Asn Thr Trp Glu Met Ile Ser Ser Arg Arg Tyr Arg Cys	
275 280 285	
agt ttc gca gtg gcc gtc ctg gat aat att atc tat atg atg ggt gga	912
Ser Phe Ala Val Ala Val Leu Asp Asn Ile Ile Tyr Met Met Gly Gly	
290 295 300	
tat gat cag tcc ccg tat aga agt tca aag gtt ata gcg tac aat aca	960
Tyr Asp Gln Ser Pro Tyr Arg Ser Ser Lys Val Ile Ala Tyr Asn Thr	
305 310 315 320	
tgt aca aat tct tgg ata tat gat ata cca gag cta aaa tat cct cgt	1008
Cys Thr Asn Ser Trp Ile Tyr Asp Ile Pro Glu Leu Lys Tyr Pro Arg	
325 330 335	
tct aat tgt ggg gga ctg gct gat gac gaa tac att tat tgt ata ggc	1056
Ser Asn Cys Gly Gly Leu Ala Asp Asp Glu Tyr Ile Tyr Cys Ile Gly	
340 345 350	
ggc ata cgc gat cag gat tca tcg ttg aca tct agt att gat aga tgg	1104
Gly Ile Arg Asp Gln Asp Ser Ser Leu Thr Ser Ser Ile Asp Arg Trp	
355 360 365	
aag cca tca aaa cca tat tgg cag aag tat gct aaa atg cgc gaa cca	1152
Lys Pro Ser Lys Pro Tyr Trp Gln Lys Tyr Ala Lys Met Arg Glu Pro	
370 375 380	
aaa tgt gat atg ggg gtt gcg atg tta aac gga tta ata tat gtc atg	1200
Lys Cys Asp Met Gly Val Ala Met Leu Asn Gly Leu Ile Tyr Val Met	
385 390 395 400	
ggg gga atc gtt aaa ggt gac acg tgt acc gac gca cta gag agt tta	1248
Gly Gly Ile Val Lys Gly Asp Thr Cys Thr Asp Ala Leu Glu Ser Leu	
405 410 415	

tca gaa gat gga tgg atg aag cat caa cgt ctt cca ata aaa atg tcc	1296
Ser Glu Asp Gly Trp Met Lys His Gln Arg Leu Pro Ile Lys Met Ser	
420 425 430	
aat atg tcg acg att gtt cat gat ggc aag att tat ata tct gga ggt	1344
Asn Met Ser Thr Ile Val His Asp Gly Lys Ile Tyr Ile Ser Gly Gly	
435 440 445	
tac aac aat agt agt gta gtt aat gta ata tcg aat cta gtc ctt agc	1392
Tyr Asn Asn Ser Ser Val Val Asn Val Ile Ser Asn Leu Val Leu Ser	
450 455 460	
tat aat tcg ata tat gat gaa tgg acc aaa tta tca tca tta aat att	1440
Tyr Asn Ser Ile Tyr Asp Glu Trp Thr Lys Leu Ser Ser Leu Asn Ile	
465 470 475 480	
cct aga att aat ccc gct cta tgg tca gcg cat aat aaa tta tat gta	1488
Pro Arg Ile Asn Pro Ala Leu Trp Ser Ala His Asn Lys Leu Tyr Val	
485 490 495	
gga gga gga ata tct gat gat gtt caa act aat aca tct gaa aca tac	1536
Gly Gly Gly Ile Ser Asp Asp Val Gln Thr Asn Thr Ser Glu Thr Tyr	
500 505 510	
gat aaa gaa aaa gat tgt tgg aca ttg gat aat ggt cac gtg tta cca	1584
Asp Lys Glu Lys Asp Cys Trp Thr Leu Asp Asn Gly His Val Leu Pro	
515 520 525	
cgc aat tat ata atg tat aaa tgc gaa ccg att aaa cat aaa tat cca	1632
Arg Asn Tyr Ile Met Tyr Lys Cys Glu Pro Ile Lys His Lys Tyr Pro	
530 535 540	
ttg gaa aaa aca cag tac acg aat gat ttt cta aag tat ttg gaa agt	1680
Leu Glu Lys Thr Gln Tyr Thr Asn Asp Phe Leu Lys Tyr Leu Glu Ser	
545 550 555 560	
ttt ata ggt agt tga	1695
Phe Ile Gly Ser *	

<210> 380
 <211> 564
 <212> PRT
 <213> vaccinia virus

<400> 380

Met Asn Ser Ser Ser Lys Leu Ile Ala Val Ile Asn Gly Phe Arg Asn	
1 5 10 15	
Ser Gly Arg Phe Cys Asp Ile Asn Ile Val Ile Asn Asp Glu Arg Ile	
20 25 30	
Asn Ala His Lys Leu Ile Leu Ser Gly Ala Ser Glu Tyr Phe Ser Ile	
35 40 45	
Leu Phe Ser Asn Asn Phe Ile Asp Ser Asn Glu Tyr Glu Val Asn Leu	
50 55 60	
Ser His Leu Asp Tyr Gln Ser Val Asn Asp Leu Ile Asp Tyr Ile Tyr	
65 70 75 80	
Gly Ile Pro Leu Ser Leu Thr Asn Asp Asn Val Lys Tyr Ile Leu Ser	

				85				90					95				
Thr	Ala	Asp	Phe	Leu	Gln	Ile	Gly	Ser	Ala	Ile	Thr	Glu	Cys	Glu	Asn		
			100					105					110				
Tyr	Ile	Leu	Lys	Asn	Leu	Cys	Ser	Lys	Asn	Cys	Ile	Asp	Phe	Tyr	Ile		
		115					120					125					
Tyr	Ala	Asp	Lys	Tyr	Asn	Asn	Lys	Lys	Ile	Glu	Ser	Ala	Ser	Phe	Asn		
	130					135					140						
Thr	Ile	Leu	Gln	Asn	Ile	Leu	Arg	Leu	Ile	Asn	Asp	Glu	Asn	Phe	Lys		
145					150					155					160		
Tyr	Leu	Thr	Glu	Glu	Ser	Met	Ile	Lys	Ile	Leu	Ser	Asp	Asp	Met	Leu		
				165					170					175			
Asn	Ile	Lys	Asn	Glu	Asp	Phe	Ala	Pro	Leu	Ile	Leu	Ile	Lys	Trp	Leu		
			180					185					190				
Glu	Ser	Thr	Gln	Gln	Ser	Cys	Thr	Val	Glu	Leu	Leu	Lys	Cys	Leu	Arg		
		195					200					205					
Ile	Ser	Leu	Leu	Ser	Pro	Gln	Val	Ile	Lys	Ser	Leu	Tyr	Ser	His	Gln		
	210					215					220						
Leu	Val	Ser	Ser	Ile	Tyr	Glu	Cys	Ile	Thr	Phe	Leu	Asn	Asn	Ile	Ala		
225					230					235					240		
Phe	Leu	Asp	Glu	Ser	Phe	Pro	Arg	Tyr	His	Ser	Ile	Glu	Leu	Ile	Ser		
				245					250					255			
Ile	Gly	Ile	Ser	Asn	Ser	Arg	Asp	Lys	Ile	Ser	Ile	Asn	Cys	Tyr	Asn		
			260				265						270				
His	Lys	Lys	Asn	Thr	Trp	Glu	Met	Ile	Ser	Ser	Arg	Arg	Tyr	Arg	Cys		
	275						280					285					
Ser	Phe	Ala	Val	Ala	Val	Leu	Asp	Asn	Ile	Ile	Tyr	Met	Met	Gly	Gly		
	290					295					300						
Tyr	Asp	Gln	Ser	Pro	Tyr	Arg	Ser	Ser	Lys	Val	Ile	Ala	Tyr	Asn	Thr		
305					310					315					320		
Cys	Thr	Asn	Ser	Trp	Ile	Tyr	Asp	Ile	Pro	Glu	Leu	Lys	Tyr	Pro	Arg		
			325					330						335			
Ser	Asn	Cys	Gly	Gly	Leu	Ala	Asp	Asp	Glu	Tyr	Ile	Tyr	Cys	Ile	Gly		
			340					345					350				
Gly	Ile	Arg	Asp	Gln	Asp	Ser	Ser	Leu	Thr	Ser	Ser	Ile	Asp	Arg	Trp		
	355						360					365					
Lys	Pro	Ser	Lys	Pro	Tyr	Trp	Gln	Lys	Tyr	Ala	Lys	Met	Arg	Glu	Pro		
	370					375					380						
Lys	Cys	Asp	Met	Gly	Val	Ala	Met	Leu	Asn	Gly	Leu	Ile	Tyr	Val	Met		
385					390					395					400		
Gly	Gly	Ile	Val	Lys	Gly	Asp	Thr	Cys	Thr	Asp	Ala	Leu	Glu	Ser	Leu		
			405						410					415			
Ser	Glu	Asp	Gly	Trp	Met	Lys	His	Gln	Arg	Leu	Pro	Ile	Lys	Met	Ser		
			420					425					430				
Asn	Met	Ser	Thr	Ile	Val	His	Asp	Gly	Lys	Ile	Tyr	Ile	Ser	Gly	Gly		
	435						440					445					
Tyr	Asn	Asn	Ser	Ser	Val	Val	Asn	Val	Ile	Ser	Asn	Leu	Val	Leu	Ser		
	450					455					460						
Tyr	Asn	Ser	Ile	Tyr	Asp	Glu	Trp	Thr	Lys	Leu	Ser	Ser	Leu	Asn	Ile		
465					470					475					480		
Pro	Arg	Ile	Asn	Pro	Ala	Leu	Trp	Ser	Ala	His	Asn	Lys	Leu	Tyr	Val		
			485					490						495			
Gly	Gly	Gly	Ile	Ser	Asp	Asp	Val	Gln	Thr	Asn	Thr	Ser	Glu	Thr	Tyr		
			500					505					510				
Asp	Lys	Glu	Lys	Asp	Cys	Trp	Thr	Leu	Asp	Asn	Gly	His	Val	Leu	Pro		
	515						520					525					
Arg	Asn	Tyr	Ile	Met	Tyr	Lys	Cys	Glu	Pro	Ile	Lys	His	Lys	Tyr	Pro		
	530					535					540						
Leu	Glu	Lys	Thr	Gln	Tyr	Thr	Asn	Asp	Phe	Leu	Lys	Tyr	Leu	Glu	Ser		
545					550					555					560		

Phe Ile Gly Ser

<210> 381
<211> 930
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(930)

<400> 381
atg aca cga tta cca ata ctt ttg tta cta ata tca tta gta tac gct 48
Met Thr Arg Leu Pro Ile Leu Leu Leu Ile Ser Leu Val Tyr Ala
1 5 10 15
aca cct ttt cct cag aca tct aaa aaa ata ggt gat gat gca act cta 96
Thr Pro Phe Pro Gln Thr Ser Lys Lys Ile Gly Asp Asp Ala Thr Leu
20 25 30
tca tgt aat cga aat aat aca aat gac tac gtt gtt atg agt gct tgg 144
Ser Cys Asn Arg Asn Asn Thr Asn Asp Tyr Val Val Met Ser Ala Trp
35 40 45
tat aag gag ccc aat tct att att ctt tta gct gct aaa agc gac gtc 192
Tyr Lys Glu Pro Asn Ser Ile Ile Leu Leu Ala Ala Lys Ser Asp Val
50 55 60
ttg tat ttt gat aat tat acc aag gat aaa ata tct tac gac tct cca 240
Leu Tyr Phe Asp Asn Tyr Thr Lys Asp Lys Ile Ser Tyr Asp Ser Pro
65 70 75 80
tac gat gat cta gtt aca act atc aca att aaa tca ttg act gct aga 288
Tyr Asp Asp Leu Val Thr Thr Ile Thr Ile Lys Ser Leu Thr Ala Arg
85 90 95
gat gcc ggt act tat gta tgt gca ttc ttt atg aca tca act aca aat 336
Asp Ala Gly Thr Tyr Val Cys Ala Phe Phe Met Thr Ser Thr Thr Asn
100 105 110
gac act gat aaa gta gat tat gaa gaa tac tcc aca gag ttg att gta 384
Asp Thr Asp Lys Val Asp Tyr Glu Glu Tyr Ser Thr Glu Leu Ile Val
115 120 125
aat aca gat agt gaa tcg act ata gac ata ata cta tct gga tct aca 432
Asn Thr Asp Ser Glu Ser Thr Ile Asp Ile Ile Leu Ser Gly Ser Thr
130 135 140
cat tca ccg gaa act agt tct gag aaa cct gat tat ata gat aat tct 480
His Ser Pro Glu Thr Ser Ser Glu Lys Pro Asp Tyr Ile Asp Asn Ser
145 150 155 160
aat tgc tcg tcg gta ttc gaa atc gcg act ccg gaa cca att act gat 528
Asn Cys Ser Ser Val Phe Glu Ile Ala Thr Pro Glu Pro Ile Thr Asp
165 170 175
aat gta gaa gat cat aca gac acc gtc aca tac act agt gat agc att 576

Asn	Val	Glu	Asp	His	Thr	Asp	Thr	Val	Thr	Tyr	Thr	Ser	Asp	Ser	Ile		
			180					185					190				
aat	aca	gta	agt	gca	aca	tct	gga	gaa	tcc	aca	aca	gac	gag	act	ccg	624	
Asn	Thr	Val	Ser	Ala	Thr	Ser	Gly	Glu	Ser	Thr	Thr	Asp	Glu	Thr	Pro		
		195					200					205					
gaa	cca	att	act	gat	aaa	gaa	gat	cat	aca	gtt	aca	gac	act	gtc	tca	672	
Glu	Pro	Ile	Thr	Asp	Lys	Glu	Asp	His	Thr	Val	Thr	Asp	Thr	Val	Ser		
	210					215					220						
tac	act	aca	gta	agt	aca	tca	tct	gga	att	gtc	act	act	aaa	tca	acc	720	
Tyr	Thr	Thr	Val	Ser	Thr	Ser	Ser	Gly	Ile	Val	Thr	Thr	Lys	Ser	Thr		
225					230					235					240		
acc	gat	gat	acg	tac	aat	gat	aat	gat	aca	gta	cca	cca	act	act	gta	768	
Thr	Asp	Asp	Thr	Tyr	Asn	Asp	Asn	Asp	Thr	Val	Pro	Pro	Thr	Thr	Val		
				245					250					255			
ggc	ggt	agt	aca	acc	tct	att	agc	aat	tat	aaa	acc	aag	gac	ttt	gta	816	
Gly	Gly	Ser	Thr	Thr	Ser	Ile	Ser	Asn	Tyr	Lys	Thr	Lys	Asp	Phe	Val		
			260					265					270				
gaa	ata	ttt	ggt	att	acc	gca	tta	att	ata	ttg	tcg	gcc	gtg	gca	ata	864	
Glu	Ile	Phe	Gly	Ile	Thr	Ala	Leu	Ile	Ile	Leu	Ser	Ala	Val	Ala	Ile		
		275					280					285					
ttc	tgt	att	acg	tat	tat	ata	tgt	aat	aaa	cgt	tca	cgt	aaa	tac	aaa	912	
Phe	Cys	Ile	Thr	Tyr	Tyr	Ile	Cys	Asn	Lys	Arg	Ser	Arg	Lys	Tyr	Lys		
	290					295					300						
aca	gag	aac	aaa	gtc	tag											930	
Thr	Glu	Asn	Lys	Val	*												
305																	

<210> 382
 <211> 309
 <212> PRT
 <213> vaccinia virus

<400> 382

Met	Thr	Arg	Leu	Pro	Ile	Leu	Leu	Leu	Leu	Ile	Ser	Leu	Val	Tyr	Ala		
1				5					10					15			
Thr	Pro	Phe	Pro	Gln	Thr	Ser	Lys	Lys	Ile	Gly	Asp	Asp	Ala	Thr	Leu		
			20					25					30				
Ser	Cys	Asn	Arg	Asn	Asn	Thr	Asn	Asp	Tyr	Val	Val	Met	Ser	Ala	Trp		
		35				40					45						
Tyr	Lys	Glu	Pro	Asn	Ser	Ile	Ile	Leu	Leu	Ala	Ala	Lys	Ser	Asp	Val		
	50					55					60						
Leu	Tyr	Phe	Asp	Asn	Tyr	Thr	Lys	Asp	Lys	Ile	Ser	Tyr	Asp	Ser	Pro		
65					70					75					80		
Tyr	Asp	Asp	Leu	Val	Thr	Thr	Ile	Thr	Ile	Lys	Ser	Leu	Thr	Ala	Arg		
			85						90					95			
Asp	Ala	Gly	Thr	Tyr	Val	Cys	Ala	Phe	Phe	Met	Thr	Ser	Thr	Thr	Asn		
		100						105					110				
Asp	Thr	Asp	Lys	Val	Asp	Tyr	Glu	Glu	Tyr	Ser	Thr	Glu	Leu	Ile	Val		
		115					120					125					
Asn	Thr	Asp	Ser	Glu	Ser	Thr	Ile	Asp	Ile	Ile	Leu	Ser	Gly	Ser	Thr		

130		135		140
His Ser Pro Glu Thr Ser	Ser Ser Glu Lys Pro Asp Tyr Ile Asp Asn Ser			
145		150		155
Asn Cys Ser Ser Val Phe	Glu Ile Ala Thr Pro Glu Pro Ile Thr Asp			160
		165		170
Asn Val Glu Asp His Thr	Asp Thr Val Thr Tyr Thr Ser Asp Ser Ile			175
		180		185
Asn Thr Val Ser Ala Thr	Ser Gly Glu Ser Thr Thr Asp Glu Thr Pro			190
		195		200
Glu Pro Ile Thr Asp Lys	Glu Asp His Thr Val Thr Asp Thr Val Ser			205
		210		215
Tyr Thr Thr Val Ser Thr	Ser Ser Gly Ile Val Thr Thr Lys Ser Thr			220
225		230		235
Thr Asp Asp Thr Tyr Asn	Asp Asn Asp Thr Val Pro Pro Thr Thr Val			240
		245		250
Gly Gly Ser Thr Thr Ser	Ile Ser Asn Tyr Lys Thr Lys Asp Phe Val			255
		260		265
Glu Ile Phe Gly Ile Thr	Ala Leu Ile Ile Leu Ser Ala Val Ala Ile			270
		275		280
Phe Cys Ile Thr Tyr Tyr	Ile Cys Asn Lys Arg Ser Arg Lys Tyr Lys			285
		290		295
Thr Glu Asn Lys Val				300
305				

<210> 383
 <211> 456
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1) ... (456)

<400> 383	
atg gaa cga gaa ggt gtc gat tac cat tac gtt aac aga gag gcc atc	48
Met Glu Arg Glu Gly Val Asp Tyr His Tyr Val Asn Arg Glu Ala Ile	
1 5 10 15	
tgg aag gga ata gcc gcc gga aac ttt cta gaa cat act gag ttt tta	96
Trp Lys Gly Ile Ala Ala Gly Asn Phe Leu Glu His Thr Glu Phe Leu	
20 25 30	
gga aat att tac gga act tct aaa aca gct gtg aat aca gcg gct att	144
Gly Asn Ile Tyr Gly Thr Ser Lys Thr Ala Val Asn Thr Ala Ala Ile	
35 40 45	
aat aat cgt att tgt gtg atg gat cta aac atc gat ggc gtt aga agt	192
Asn Asn Arg Ile Cys Val Met Asp Leu Asn Ile Asp Gly Val Arg Ser	
50 55 60	
ctt aaa aat acg tac cta atg cct tac tcg gtg tat ata aga cct acc	240
Leu Lys Asn Thr Tyr Leu Met Pro Tyr Ser Val Tyr Ile Arg Pro Thr	
65 70 75 80	
tct ctt aaa atg gtt gag acc aag ctt cgt tgt aga aac act gaa gct	288
Ser Leu Lys Met Val Glu Thr Lys Leu Arg Cys Arg Asn Thr Glu Ala	
85 90 95	

aac gat gag att cat cgt cgc gtg ata ttg gca aaa acg gat atg gat 336
 Asn Asp Glu Ile His Arg Arg Val Ile Leu Ala Lys Thr Asp Met Asp
 100 105 110

 gag gcc aac gaa gca ggt cta ttc gac act att att att gaa gat gat 384
 Glu Ala Asn Glu Ala Gly Leu Phe Asp Thr Ile Ile Ile Glu Asp Asp
 115 120 125

 gtg aat tta gca tat agt aag tta att cag ata cta cag gac cgt att 432
 Val Asn Leu Ala Tyr Ser Lys Leu Ile Gln Ile Leu Gln Asp Arg Ile
 130 135 140

 aga atg tat ttt aac act aat taa 456
 Arg Met Tyr Phe Asn Thr Asn *
 145 150

<210> 384
 <211> 151
 <212> PRT
 <213> vaccinia virus

<400> 384
 Met Glu Arg Glu Gly Val Asp Tyr His Tyr Val Asn Arg Glu Ala Ile
 1 5 10 15
 Trp Lys Gly Ile Ala Ala Gly Asn Phe Leu Glu His Thr Glu Phe Leu
 20 25 30
 Gly Asn Ile Tyr Gly Thr Ser Lys Thr Ala Val Asn Thr Ala Ala Ile
 35 40 45
 Asn Asn Arg Ile Cys Val Met Asp Leu Asn Ile Asp Gly Val Arg Ser
 50 55 60
 Leu Lys Asn Thr Tyr Leu Met Pro Tyr Ser Val Tyr Ile Arg Pro Thr
 65 70 75 80
 Ser Leu Lys Met Val Glu Thr Lys Leu Arg Cys Arg Asn Thr Glu Ala
 85 90 95
 Asn Asp Glu Ile His Arg Arg Val Ile Leu Ala Lys Thr Asp Met Asp
 100 105 110
 Glu Ala Asn Glu Ala Gly Leu Phe Asp Thr Ile Ile Ile Glu Asp Asp
 115 120 125
 Val Asn Leu Ala Tyr Ser Lys Leu Ile Gln Ile Leu Gln Asp Arg Ile
 130 135 140
 Arg Met Tyr Phe Asn Thr Asn
 145 150

<210> 385
 <211> 903
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(903)

<400> 385
 atg aac ttt caa gga ctt gtg tta act gac aat tgc aaa aat caa tgg 48
 Met Asn Phe Gln Gly Leu Val Leu Thr Asp Asn Cys Lys Asn Gln Trp
 1 5 10 15

gtc gtt gga cca tta ata gga aaa ggt gga ttt ggt agt att tat act	96
Val Val Gly Pro Leu Ile Gly Lys Gly Gly Phe Gly Ser Ile Tyr Thr	
20 25 30	
act aat gac aat aat tat gta gta aaa ata gag ccc aaa gct aac gga	144
Thr Asn Asp Asn Asn Tyr Val Val Lys Ile Glu Pro Lys Ala Asn Gly	
35 40 45	
tca tta ttt acc gaa cag gca ttt tat act aga gta ctt aaa cca tcc	192
Ser Leu Phe Thr Glu Gln Ala Phe Tyr Thr Arg Val Leu Lys Pro Ser	
50 55 60	
gtt atc gaa gaa tgg aaa aaa tct cac aat ata aag cac gta ggt ctt	240
Val Ile Glu Glu Trp Lys Lys Ser His Asn Ile Lys His Val Gly Leu	
65 70 75 80	
atc acg tgc aag gca ttt ggt cta tac aaa tcc att aat gtg gaa tat	288
Ile Thr Cys Lys Ala Phe Gly Leu Tyr Lys Ser Ile Asn Val Glu Tyr	
85 90 95	
cga ttc ttg gta att aat aga tta ggt gca gat cta gat gcg gtg atc	336
Arg Phe Leu Val Ile Asn Arg Leu Gly Ala Asp Leu Asp Ala Val Ile	
100 105 110	
aga gcc aat aat aat aga tta cca aaa agg tcg gtg atg ttg atc gga	384
Arg Ala Asn Asn Asn Arg Leu Pro Lys Arg Ser Val Met Leu Ile Gly	
115 120 125	
atc gaa atc tta aat acc ata caa ttt atg cac gag caa gga tat tct	432
Ile Glu Ile Leu Asn Thr Ile Gln Phe Met His Glu Gln Gly Tyr Ser	
130 135 140	
cac gga gat att aaa gcg agt aat ata gtc tta gat caa ata gat aag	480
His Gly Asp Ile Lys Ala Ser Asn Ile Val Leu Asp Gln Ile Asp Lys	
145 150 155 160	
aat aaa tta tat cta gtg gat tac gga ttg gtt tct aaa ttc atg tct	528
Asn Lys Leu Tyr Leu Val Asp Tyr Gly Leu Val Ser Lys Phe Met Ser	
165 170 175	
aat ggc gaa cat gtt cca ttt ata aga aat cca aat aaa atg gat aac	576
Asn Gly Glu His Val Pro Phe Ile Arg Asn Pro Asn Lys Met Asp Asn	
180 185 190	
ggt act cta gaa ttt aca cct ata gat tcg cat aaa gga tac gtt gta	624
Gly Thr Leu Glu Phe Thr Pro Ile Asp Ser His Lys Gly Tyr Val Val	
195 200 205	
tct aga cgt gga gat cta gaa aca ctt gga tat tgt atg att aga tgg	672
Ser Arg Arg Gly Asp Leu Glu Thr Leu Gly Tyr Cys Met Ile Arg Trp	
210 215 220	
ttg gga ggt atc ttg cca tgg act aag ata tct gaa aca aag aat tgt	720
Leu Gly Gly Ile Leu Pro Trp Thr Lys Ile Ser Glu Thr Lys Asn Cys	
225 230 235 240	
gca tta gta agt gcc aca aaa cag aaa tat gtt aac aat act gcg act	768
Ala Leu Val Ser Ala Thr Lys Gln Lys Tyr Val Asn Asn Thr Ala Thr	
245 250 255	

ttg tta atg acc agt ttg caa tat gca cct aga gaa ttg ctg caa tat	816
Leu Leu Met Thr Ser Leu Gln Tyr Ala Pro Arg Glu Leu Leu Gln Tyr	
260 265 270	

att acc atg gta aac tct ttg aca tat ttt gag gaa ccc aat tac gac	864
Ile Thr Met Val Asn Ser Leu Thr Tyr Phe Glu Glu Pro Asn Tyr Asp	
275 280 285	

gag ttt cgg cac ata tta atg cag ggt gta tat tat taa	903
Glu Phe Arg His Ile Leu Met Gln Gly Val Tyr Tyr *	
290 295 300	

<210> 386

<211> 300

<212> PRT

<213> vaccinia virus

<400> 386

Met Asn Phe Gln Gly Leu Val Leu Thr Asp Asn Cys Lys Asn Gln Trp	
1 5 10 15	
Val Val Gly Pro Leu Ile Gly Lys Gly Gly Phe Gly Ser Ile Tyr Thr	
20 25 30	
Thr Asn Asp Asn Asn Tyr Val Val Lys Ile Glu Pro Lys Ala Asn Gly	
35 40 45	
Ser Leu Phe Thr Glu Gln Ala Phe Tyr Thr Arg Val Leu Lys Pro Ser	
50 55 60	
Val Ile Glu Glu Trp Lys Lys Ser His Asn Ile Lys His Val Gly Leu	
65 70 75 80	
Ile Thr Cys Lys Ala Phe Gly Leu Tyr Lys Ser Ile Asn Val Glu Tyr	
85 90 95	
Arg Phe Leu Val Ile Asn Arg Leu Gly Ala Asp Leu Asp Ala Val Ile	
100 105 110	
Arg Ala Asn Asn Asn Arg Leu Pro Lys Arg Ser Val Met Leu Ile Gly	
115 120 125	
Ile Glu Ile Leu Asn Thr Ile Gln Phe Met His Glu Gln Gly Tyr Ser	
130 135 140	
His Gly Asp Ile Lys Ala Ser Asn Ile Val Leu Asp Gln Ile Asp Lys	
145 150 155 160	
Asn Lys Leu Tyr Leu Val Asp Tyr Gly Leu Val Ser Lys Phe Met Ser	
165 170 175	
Asn Gly Glu His Val Pro Phe Ile Arg Asn Pro Asn Lys Met Asp Asn	
180 185 190	
Gly Thr Leu Glu Phe Thr Pro Ile Asp Ser His Lys Gly Tyr Val Val	
195 200 205	
Ser Arg Arg Gly Asp Leu Glu Thr Leu Gly Tyr Cys Met Ile Arg Trp	
210 215 220	
Leu Gly Gly Ile Leu Pro Trp Thr Lys Ile Ser Glu Thr Lys Asn Cys	
225 230 235 240	
Ala Leu Val Ser Ala Thr Lys Gln Lys Tyr Val Asn Asn Thr Ala Thr	
245 250 255	
Leu Leu Met Thr Ser Leu Gln Tyr Ala Pro Arg Glu Leu Leu Gln Tyr	
260 265 270	
Ile Thr Met Val Asn Ser Leu Thr Tyr Phe Glu Glu Pro Asn Tyr Asp	
275 280 285	
Glu Phe Arg His Ile Leu Met Gln Gly Val Tyr Tyr	
290 295 300	

<210> 387
 <211> 660
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(660)

<400> 387

atg gcg atg ttt tac gca cac gct ctc ggt ggg tac gac gag aat ctt	48
Met Ala Met Phe Tyr Ala His Ala Leu Gly Gly Tyr Asp Glu Asn Leu	
1 5 10 15	
cat gcc ttt cct gga ata tca tgc act gtt gcc aat gat gtc agg aaa	96
His Ala Phe Pro Gly Ile Ser Ser Thr Val Ala Asn Asp Val Arg Lys	
20 25 30	
tat tct gtt gtg tca gtt tat aat aac aag tat gac att gta aaa gac	144
Tyr Ser Val Val Ser Val Tyr Asn Asn Lys Tyr Asp Ile Val Lys Asp	
35 40 45	
aaa tat atg tgg tgt tac agt cag gtg aac aag aga tat att gga gca	192
Lys Tyr Met Trp Cys Tyr Ser Gln Val Asn Lys Arg Tyr Ile Gly Ala	
50 55 60	
ctg ctg cct atg ttt gag tgc aat gaa tat cta caa att gga gat ccg	240
Leu Leu Pro Met Phe Glu Cys Asn Glu Tyr Leu Gln Ile Gly Asp Pro	
65 70 75 80	
atc cat gat caa gaa gga aat caa atc tct atc atc aca tat cgc cac	288
Ile His Asp Gln Glu Gly Asn Gln Ile Ser Ile Ile Thr Tyr Arg His	
85 90 95	
aaa aac tac tat gct cta agc gga atc ggg tac gag agt cta gac ttg	336
Lys Asn Tyr Tyr Ala Leu Ser Gly Ile Gly Tyr Glu Ser Leu Asp Leu	
100 105 110	
tgt ttg gaa gga gta ggg att cat cat cac gta ctt gaa gca gga aac	384
Cys Leu Glu Gly Val Gly Ile His His His Val Leu Glu Ala Gly Asn	
115 120 125	
gct gta tat gga aaa gtt caa cat gat tat tct act atc aaa gag aag	432
Ala Val Tyr Gly Lys Val Gln His Asp Tyr Ser Thr Ile Lys Glu Lys	
130 135 140	
gcc aaa gaa atg agt aca ctt agt cca gga cct ata att gat tac cac	480
Ala Lys Glu Met Ser Thr Leu Ser Pro Gly Pro Ile Ile Asp Tyr His	
145 150 155 160	
gtc tgg ata gga gat tgt atc tgt caa gtt act gct gtg gac gta cat	528
Val Trp Ile Gly Asp Cys Ile Cys Gln Val Thr Ala Val Asp Val His	
165 170 175	
gga aag gaa att atg aaa atg aga ttc aaa aag ggt gcg gtg ctt ccg	576
Gly Lys Glu Ile Met Lys Met Arg Phe Lys Lys Gly Ala Val Leu Pro	
180 185 190	
atc cca aat ctg gta aaa gtt aaa ctt ggg gag aat gat aca gaa aat	624

Ile Pro Asn Leu Val Lys Val Lys Leu Gly Glu Asn Asp Thr Glu Asn
 195 200 205

ctt tct tct act ata tcg gcg gca cca tcg agg taa
 Leu Ser Ser Thr Ile Ser Ala Ala Pro Ser Arg *
 210 215

660

<210> 388
 <211> 219
 <212> PRT
 <213> vaccinia virus

<400> 388
 Met Ala Met Phe Tyr Ala His Ala Leu Gly Gly Tyr Asp Glu Asn Leu
 1 5 10 15
 His Ala Phe Pro Gly Ile Ser Ser Thr Val Ala Asn Asp Val Arg Lys
 20 25 30
 Tyr Ser Val Val Ser Val Tyr Asn Asn Lys Tyr Asp Ile Val Lys Asp
 35 40 45
 Lys Tyr Met Trp Cys Tyr Ser Gln Val Asn Lys Arg Tyr Ile Gly Ala
 50 55 60
 Leu Leu Pro Met Phe Glu Cys Asn Glu Tyr Leu Gln Ile Gly Asp Pro
 65 70 75 80
 Ile His Asp Gln Glu Gly Asn Gln Ile Ser Ile Ile Thr Tyr Arg His
 85 90 95
 Lys Asn Tyr Tyr Ala Leu Ser Gly Ile Gly Tyr Glu Ser Leu Asp Leu
 100 105 110
 Cys Leu Glu Gly Val Gly Ile His His His Val Leu Glu Ala Gly Asn
 115 120 125
 Ala Val Tyr Gly Lys Val Gln His Asp Tyr Ser Thr Ile Lys Glu Lys
 130 135 140
 Ala Lys Glu Met Ser Thr Leu Ser Pro Gly Pro Ile Ile Asp Tyr His
 145 150 155 160
 Val Trp Ile Gly Asp Cys Ile Cys Gln Val Thr Ala Val Asp Val His
 165 170 175
 Gly Lys Glu Ile Met Lys Met Arg Phe Lys Lys Gly Ala Val Leu Pro
 180 185 190
 Ile Pro Asn Leu Val Lys Val Lys Leu Gly Glu Asn Asp Thr Glu Asn
 195 200 205
 Leu Ser Ser Thr Ile Ser Ala Ala Pro Ser Arg
 210 215

<210> 389
 <211> 375
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(375)

<400> 389
 atg aaa cgt ttg gaa act ata cgc cat atg tgg tct gtt gta tat gat 48
 Met Lys Arg Leu Glu Thr Ile Arg His Met Trp Ser Val Val Tyr Asp
 1 5 10 15
 cat ttt aat att gtg aat ggt aaa gaa tgc tgt tat gtg cat acg cat 96

His	Phe	Asn	Ile	Val	Asn	Gly	Lys	Glu	Cys	Cys	Tyr	Val	His	Thr	His	
			20					25					30			
ttg	tct	aat	caa	aat	ctt	ata	ccg	agt	act	gta	aaa	aca	aat	ttg	tac	144
Leu	Ser	Asn	Gln	Asn	Leu	Ile	Pro	Ser	Thr	Val	Lys	Thr	Asn	Leu	Tyr	
		35					40				45					
atg	aag	act	atg	gga	tca	tgc	att	caa	atg	gat	tcc	atg	gaa	gct	cta	192
Met	Lys	Thr	Met	Gly	Ser	Cys	Ile	Gln	Met	Asp	Ser	Met	Glu	Ala	Leu	
	50					55				60						
gag	tat	ctt	agc	gaa	ctg	aag	gaa	tca	ggg	gga	tgg	agt	ccc	aga	cca	240
Glu	Tyr	Leu	Ser	Glu	Leu	Lys	Glu	Ser	Gly	Gly	Trp	Ser	Pro	Arg	Pro	
65					70				75						80	
gaa	atg	cag	gaa	ttt	gaa	tat	cca	gat	gga	gtg	gaa	gac	act	gaa	tca	288
Glu	Met	Gln	Glu	Phe	Glu	Tyr	Pro	Asp	Gly	Val	Glu	Asp	Thr	Glu	Ser	
			85					90						95		
att	gag	aga	ttg	gca	gag	gag	ttc	ttc	aat	aga	tca	gaa	ctt	cag	gct	336
Ile	Glu	Arg	Leu	Ala	Glu	Glu	Phe	Phe	Asn	Arg	Ser	Glu	Leu	Gln	Ala	
			100				105						110			
ggg	aaa	tca	gtt	aaa	ttt	ggg	aat	tct	att	aat	tgt	taa				375
Gly	Lys	Ser	Val	Lys	Phe	Gly	Asn	Ser	Ile	Asn	Cys	*				
	115						120									

<210> 390
 <211> 124
 <212> PRT
 <213> vaccinia virus

<400> 390																
Met	Lys	Arg	Leu	Glu	Thr	Ile	Arg	His	Met	Trp	Ser	Val	Val	Tyr	Asp	
1				5					10					15		
His	Phe	Asn	Ile	Val	Asn	Gly	Lys	Glu	Cys	Cys	Tyr	Val	His	Thr	His	
		20						25					30			
Leu	Ser	Asn	Gln	Asn	Leu	Ile	Pro	Ser	Thr	Val	Lys	Thr	Asn	Leu	Tyr	
		35					40				45					
Met	Lys	Thr	Met	Gly	Ser	Cys	Ile	Gln	Met	Asp	Ser	Met	Glu	Ala	Leu	
	50					55				60						
Glu	Tyr	Leu	Ser	Glu	Leu	Lys	Glu	Ser	Gly	Gly	Trp	Ser	Pro	Arg	Pro	
65					70				75						80	
Glu	Met	Gln	Glu	Phe	Glu	Tyr	Pro	Asp	Gly	Val	Glu	Asp	Thr	Glu	Ser	
			85					90					95			
Ile	Glu	Arg	Leu	Ala	Glu	Glu	Phe	Phe	Asn	Arg	Ser	Glu	Leu	Gln	Ala	
			100				105						110			
Gly	Lys	Ser	Val	Lys	Phe	Gly	Asn	Ser	Ile	Asn	Cys					
	115						120									

<210> 391
 <211> 1677
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS

<222> (1)...(1677)

<400> 391

atg gat ttt ttt aaa aag gaa ata ctt gac tgg agt ata tat tta tct	48
Met Asp Phe Phe Lys Lys Glu Ile Leu Asp Trp Ser Ile Tyr Leu Ser	
1 5 10 15	
ctt cat tat ata gca cgc gtg ttt tcc aat ttt tcc aca tcc cat ata	96
Leu His Tyr Ile Ala Arg Val Phe Ser Asn Phe Ser Thr Ser His Ile	
20 25 30	
ata cag gat tat aat ctc gtt cga aca tac gag aaa gtg gat aaa aca	144
Ile Gln Asp Tyr Asn Leu Val Arg Thr Tyr Glu Lys Val Asp Lys Thr	
35 40 45	
ata gtt gat ttt tta tct agg ttg cca aat tta ttc cat att tta gaa	192
Ile Val Asp Phe Leu Ser Arg Leu Pro Asn Leu Phe His Ile Leu Glu	
50 55 60	
tat ggg gaa aat att cta cat att tat tct atg gat gat gct aat acg	240
Tyr Gly Glu Asn Ile Leu His Ile Tyr Ser Met Asp Asp Ala Asn Thr	
65 70 75 80	
aat att ata att ttt ttt cta gat aga gta tta aat att aat aag aac	288
Asn Ile Ile Ile Phe Phe Leu Asp Arg Val Leu Asn Ile Asn Lys Asn	
85 90 95	
ggg tca ttt ata cac aat ctc ggg tta tca tca tcc att aat ata aaa	336
Gly Ser Phe Ile His Asn Leu Gly Leu Ser Ser Ser Ile Asn Ile Lys	
100 105 110	
gaa tat gta tat caa tta gtt aat aat gat cat cca gat aat agg ata	384
Glu Tyr Val Tyr Gln Leu Val Asn Asn Asp His Pro Asp Asn Arg Ile	
115 120 125	
aga cta atg ctt gaa aat gga cgt aga aca aga cat ttt ttg tcc tat	432
Arg Leu Met Leu Glu Asn Gly Arg Arg Thr Arg His Phe Leu Ser Tyr	
130 135 140	
ata tca gat aca gtt aat atc tat ata tgt att tta ata aat cat gga	480
Ile Ser Asp Thr Val Asn Ile Tyr Ile Cys Ile Leu Ile Asn His Gly	
145 150 155 160	
ttt tat ata gat gcc gaa gac agt tac ggt tgt aca tta tta cat aga	528
Phe Tyr Ile Asp Ala Glu Asp Ser Tyr Gly Cys Thr Leu Leu His Arg	
165 170 175	
tgt ata tat cac tat aag aaa tca gaa tca gaa tca tac aat gaa tta	576
Cys Ile Tyr His Tyr Lys Lys Ser Glu Ser Glu Ser Tyr Asn Glu Leu	
180 185 190	
att aag ata ttg tta aat aat gga tcc gat gta gat aaa aaa gat acg	624
Ile Lys Ile Leu Leu Asn Asn Gly Ser Asp Val Asp Lys Lys Asp Thr	
195 200 205	
tac gga aac aca cct ttt atc cta tta tgt aaa cac gat atc aac aac	672
Tyr Gly Asn Thr Pro Phe Ile Leu Leu Cys Lys His Asp Ile Asn Asn	
210 215 220	

gtg gaa ttg ttt gag ata tgt tta gag aat gct aat ata gac tct gta	720
Val Glu Leu Phe Glu Ile Cys Leu Glu Asn Ala Asn Ile Asp Ser Val	
225 230 235 240	
gac ttt aat aga tat aca cct ctt cat tat gtc tca tgt cgt aat aaa	768
Asp Phe Asn Arg Tyr Thr Pro Leu His Tyr Val Ser Cys Arg Asn Lys	
245 250 255	
tat gat ttt gta aag tta tta att tct aaa gga gca aat gtt aat gcg	816
Tyr Asp Phe Val Lys Leu Leu Ile Ser Lys Gly Ala Asn Val Asn Ala	
260 265 270	
cgt aat aaa ttc gga act act cca ttt tat tgt gga att ata cac ggt	864
Arg Asn Lys Phe Gly Thr Thr Pro Phe Tyr Cys Gly Ile Ile His Gly	
275 280 285	
atc tcg ctt ata aaa cta tat ttg gaa tca gac aca gag tta gaa ata	912
Ile Ser Leu Ile Lys Leu Tyr Leu Glu Ser Asp Thr Glu Leu Glu Ile	
290 295 300	
gat aat gaa cat ata gtt cgt cat tta ata att ttt gat gct gtt gaa	960
Asp Asn Glu His Ile Val Arg His Leu Ile Ile Phe Asp Ala Val Glu	
305 310 315 320	
tct tta gat tat cta tta tcc aga gga gtt att gat att aac tat cgt	1008
Ser Leu Asp Tyr Leu Leu Ser Arg Gly Val Ile Asp Ile Asn Tyr Arg	
325 330 335	
act ata tac aac gaa aca tct att tac gac gct gtc agt tat aat gcg	1056
Thr Ile Tyr Asn Glu Thr Ser Ile Tyr Asp Ala Val Ser Tyr Asn Ala	
340 345 350	
tat aat acg ttg gtc tat cta tta aac aga aat ggt gat ttt gag acg	1104
Tyr Asn Thr Leu Val Tyr Leu Leu Asn Arg Asn Gly Asp Phe Glu Thr	
355 360 365	
att act act agt gga tgt aca tgt att tcg gaa gca gtc gca aac aac	1152
Ile Thr Thr Ser Gly Cys Thr Cys Ile Ser Glu Ala Val Ala Asn Asn	
370 375 380	
aac aaa ata ata atg gaa gta cta ttg tct aaa cga cca tct ttg aaa	1200
Asn Lys Ile Ile Met Glu Val Leu Leu Ser Lys Arg Pro Ser Leu Lys	
385 390 395 400	
att atg ata cag tct atg ata gca att act aaa cat aaa cag cat aat	1248
Ile Met Ile Gln Ser Met Ile Ala Ile Thr Lys His Lys Gln His Asn	
405 410 415	
gca gat tta ttg aaa atg tgt ata aaa tat act gcg tgt atg acc gat	1296
Ala Asp Leu Leu Lys Met Cys Ile Lys Tyr Thr Ala Cys Met Thr Asp	
420 425 430	
tat gat act ctt ata gat gta cag tcg cta cag caa tat aaa tgg tat	1344
Tyr Asp Thr Leu Ile Asp Val Gln Ser Leu Gln Gln Tyr Lys Trp Tyr	
435 440 445	
att tta aga tgt ttc gat gaa ata gat atc atg aag aga tgt tat ata	1392
Ile Leu Arg Cys Phe Asp Glu Ile Asp Ile Met Lys Arg Cys Tyr Ile	
450 455 460	

aaa aat aaa act gta ttc caa tta gtt ttt tgt atc aaa gac att aat	1440
Lys Asn Lys Thr Val Phe Gln Leu Val Phe Cys Ile Lys Asp Ile Asn	
465 470 475 480	

act tta atg aga tac ggt aaa cat cct tct ttc gtg aaa tgc act agt	1488
Thr Leu Met Arg Tyr Gly Lys His Pro Ser Phe Val Lys Cys Thr Ser	
485 490 495	

ctc gac gta tac gga agt cgt gta cgt aat atc ata gca tct att aga	1536
Leu Asp Val Tyr Gly Ser Arg Val Arg Asn Ile Ile Ala Ser Ile Arg	
500 505 510	

tat cgt cag aga tta att agt cta tta tcc aag aag ctg gat gcg gga	1584
Tyr Arg Gln Arg Leu Ile Ser Leu Leu Ser Lys Lys Leu Asp Ala Gly	
515 520 525	

gat aaa tgg tcg tgt ttt cct aac gaa ata aaa tat aaa ata ttg gaa	1632
Asp Lys Trp Ser Cys Phe Pro Asn Glu Ile Lys Tyr Lys Ile Leu Glu	
530 535 540	

aac ttt aac gat aac gaa ctg tcc aca tat cta aaa atc tta taa	1677
Asn Phe Asn Asp Asn Glu Leu Ser Thr Tyr Leu Lys Ile Leu *	
545 550 555	

<210> 392
 <211> 558
 <212> PRT
 <213> vaccinia virus

<400> 392	
Met Asp Phe Phe Lys Lys Glu Ile Leu Asp Trp Ser Ile Tyr Leu Ser	
1 5 10 15	
Leu His Tyr Ile Ala Arg Val Phe Ser Asn Phe Ser Thr Ser His Ile	
20 25 30	
Ile Gln Asp Tyr Asn Leu Val Arg Thr Tyr Glu Lys Val Asp Lys Thr	
35 40 45	
Ile Val Asp Phe Leu Ser Arg Leu Pro Asn Leu Phe His Ile Leu Glu	
50 55 60	
Tyr Gly Glu Asn Ile Leu His Ile Tyr Ser Met Asp Asp Ala Asn Thr	
65 70 75 80	
Asn Ile Ile Ile Phe Phe Leu Asp Arg Val Leu Asn Ile Asn Lys Asn	
85 90 95	
Gly Ser Phe Ile His Asn Leu Gly Leu Ser Ser Ser Ile Asn Ile Lys	
100 105 110	
Glu Tyr Val Tyr Gln Leu Val Asn Asn Asp His Pro Asp Asn Arg Ile	
115 120 125	
Arg Leu Met Leu Glu Asn Gly Arg Arg Thr Arg His Phe Leu Ser Tyr	
130 135 140	
Ile Ser Asp Thr Val Asn Ile Tyr Ile Cys Ile Leu Ile Asn His Gly	
145 150 155 160	
Phe Tyr Ile Asp Ala Glu Asp Ser Tyr Gly Cys Thr Leu Leu His Arg	
165 170 175	
Cys Ile Tyr His Tyr Lys Lys Ser Glu Ser Glu Ser Tyr Asn Glu Leu	
180 185 190	
Ile Lys Ile Leu Leu Asn Asn Gly Ser Asp Val Asp Lys Lys Asp Thr	
195 200 205	

Tyr Gly Asn Thr Pro Phe Ile Leu Leu Cys Lys His Asp Ile Asn Asn
 210 215 220
 Val Glu Leu Phe Glu Ile Cys Leu Glu Asn Ala Asn Ile Asp Ser Val
 225 230 235 240
 Asp Phe Asn Arg Tyr Thr Pro Leu His Tyr Val Ser Cys Arg Asn Lys
 245 250 255
 Tyr Asp Phe Val Lys Leu Leu Ile Ser Lys Gly Ala Asn Val Asn Ala
 260 265 270
 Arg Asn Lys Phe Gly Thr Thr Pro Phe Tyr Cys Gly Ile Ile His Gly
 275 280 285
 Ile Ser Leu Ile Lys Leu Tyr Leu Glu Ser Asp Thr Glu Leu Glu Ile
 290 295 300
 Asp Asn Glu His Ile Val Arg His Leu Ile Ile Phe Asp Ala Val Glu
 305 310 315 320
 Ser Leu Asp Tyr Leu Leu Ser Arg Gly Val Ile Asp Ile Asn Tyr Arg
 325 330 335
 Thr Ile Tyr Asn Glu Thr Ser Ile Tyr Asp Ala Val Ser Tyr Asn Ala
 340 345 350
 Tyr Asn Thr Leu Val Tyr Leu Leu Asn Arg Asn Gly Asp Phe Glu Thr
 355 360 365
 Ile Thr Thr Ser Gly Cys Thr Cys Ile Ser Glu Ala Val Ala Asn Asn
 370 375 380
 Asn Lys Ile Ile Met Glu Val Leu Leu Ser Lys Arg Pro Ser Leu Lys
 385 390 395 400
 Ile Met Ile Gln Ser Met Ile Ala Ile Thr Lys His Lys Gln His Asn
 405 410 415
 Ala Asp Leu Leu Lys Met Cys Ile Lys Tyr Thr Ala Cys Met Thr Asp
 420 425 430
 Tyr Asp Thr Leu Ile Asp Val Gln Ser Leu Gln Gln Tyr Lys Trp Tyr
 435 440 445
 Ile Leu Arg Cys Phe Asp Glu Ile Asp Ile Met Lys Arg Cys Tyr Ile
 450 455 460
 Lys Asn Lys Thr Val Phe Gln Leu Val Phe Cys Ile Lys Asp Ile Asn
 465 470 475 480
 Thr Leu Met Arg Tyr Gly Lys His Pro Ser Phe Val Lys Cys Thr Ser
 485 490 495
 Leu Asp Val Tyr Gly Ser Arg Val Arg Asn Ile Ile Ala Ser Ile Arg
 500 505 510
 Tyr Arg Gln Arg Leu Ile Ser Leu Leu Ser Lys Lys Leu Asp Ala Gly
 515 520 525
 Asp Lys Trp Ser Cys Phe Pro Asn Glu Ile Lys Tyr Lys Ile Leu Glu
 530 535 540
 Asn Phe Asn Asp Asn Glu Leu Ser Thr Tyr Leu Lys Ile Leu
 545 550 555

<210> 393
 <211> 954
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(954)

<400> .393
 atg aaa acg att tcc gtt gtt acg ttg tta tgc gta cta cct gct gtt 48
 Met Lys Thr Ile Ser Val Val Thr Leu Leu Cys Val Leu Pro Ala Val
 1 5 10 15

gtt tat tca aca tgt act gta ccc act atg aat aac gct aaa tta acg	96
Val Tyr Ser Thr Cys Thr Val Pro Thr Met Asn Asn Ala Lys Leu Thr	
20 25 30	
tct acc gaa aca tcg ttt aat aat aac cag aaa gtt aca ttt aca tgt	144
Ser Thr Glu Thr Ser Phe Asn Asn Asn Gln Lys Val Thr Phe Thr Cys	
35 40 45	
gat cag gga tat cat tct ttg gat cca aat gct gtc tgc gaa aca gat	192
Asp Gln Gly Tyr His Ser Leu Asp Pro Asn Ala Val Cys Glu Thr Asp	
50 55 60	
aaa tgg aaa tac gaa aat cca tgc aag aaa atg tgc aca gtt tct gat	240
Lys Trp Lys Tyr Glu Asn Pro Cys Lys Lys Met Cys Thr Val Ser Asp	
65 70 75 80	
tat gtc tct gaa cta tat aat aaa ccg cta tac gaa gtg aat tcc acc	288
Tyr Val Ser Glu Leu Tyr Asn Lys Pro Leu Tyr Glu Val Asn Ser Thr	
85 90 95	
atg aca cta agt tgc aac ggc gaa aca aaa tat ttt cgt tgc gaa gaa	336
Met Thr Leu Ser Cys Asn Gly Glu Thr Lys Tyr Phe Arg Cys Glu Glu	
100 105 110	
aaa aat gga aat act tct tgg aat gat act gtt acg tgt cct aat gcg	384
Lys Asn Gly Asn Thr Ser Trp Asn Asp Thr Val Thr Cys Pro Asn Ala	
115 120 125	
gaa tgt caa cct ctt caa tta gaa cac gga tcg tgt caa cca gtt aaa	432
Glu Cys Gln Pro Leu Gln Leu Glu His Gly Ser Cys Gln Pro Val Lys	
130 135 140	
gaa aaa tac tca ttt ggg gaa tat ata act atc aac tgt gat gtt gga	480
Glu Lys Tyr Ser Phe Gly Glu Tyr Ile Thr Ile Asn Cys Asp Val Gly	
145 150 155 160	
tat gag gtt att ggt gct tcg tac ata agt tgt aca gct aat tct tgg	528
Tyr Glu Val Ile Gly Ala Ser Tyr Ile Ser Cys Thr Ala Asn Ser Trp	
165 170 175	
aat gtt att cca tca tgt caa caa aaa tgt gat ata ccg tct cta tct	576
Asn Val Ile Pro Ser Cys Gln Gln Lys Cys Asp Ile Pro Ser Leu Ser	
180 185 190	
aat gga tta att tcc gga tct aca ttt tct atc ggt ggc gtt ata cat	624
Asn Gly Leu Ile Ser Gly Ser Thr Phe Ser Ile Gly Gly Val Ile His	
195 200 205	
ctt agt tgt aaa agt ggt ttt ata cta acg gga tct cca tca tcc aca	672
Leu Ser Cys Lys Ser Gly Phe Ile Leu Thr Gly Ser Pro Ser Ser Thr	
210 215 220	
tgt atc gac ggt aaa tgg aat ccc ata ctc cca aca tgt gta cga tct	720
Cys Ile Asp Gly Lys Trp Asn Pro Ile Leu Pro Thr Cys Val Arg Ser	
225 230 235 240	
aac gaa aaa ttt gat cca gtg gat gat ggt ccc gac gat gag aca gat	768
Asn Glu Lys Phe Asp Pro Val Asp Asp Gly Pro Asp Asp Glu Thr Asp	

	245		250		255	
ttg agc aaa ctc tcg aaa gac gtt gta caa tat gaa caa gaa ata gaa						816
Leu Ser Lys Leu Ser Lys Asp Val Val Gln Tyr Glu Gln Glu Ile Glu						
	260		265		270	
tcg tta gaa gca act tat cat ata atc ata gtg gcg tta aca att atg						864
Ser Leu Glu Ala Thr Tyr His Ile Ile Ile Val Ala Leu Thr Ile Met						
	275		280		285	
ggc gtc ata ttt tta atc tcc gtt ata gta tta gtt tgt tcc tgt gac						912
Gly Val Ile Phe Leu Ile Ser Val Ile Val Leu Val Cys Ser Cys Asp						
	290		295		300	
aaa aat aat gac caa tat aag ttc cat aaa ttg cta ccg taa						954
Lys Asn Asn Asp Gln Tyr Lys Phe His Lys Leu Leu Pro *						
305	310		315			

<210> 394
 <211> 317
 <212> PRT
 <213> vaccinia virus

<400> 394

Met Lys Thr Ile Ser Val Val Thr Leu Leu Cys Val Leu Pro Ala Val																
1				5				10						15		
Val Tyr Ser Thr Cys Thr Val Pro Thr Met Asn Asn Ala Lys Leu Thr																
			20				25						30			
Ser Thr Glu Thr Ser Phe Asn Asn Asn Gln Lys Val Thr Phe Thr Cys																
		35				40						45				
Asp Gln Gly Tyr His Ser Leu Asp Pro Asn Ala Val Cys Glu Thr Asp																
	50				55					60						
Lys Trp Lys Tyr Glu Asn Pro Cys Lys Lys Met Cys Thr Val Ser Asp																
65				70				75								80
Tyr Val Ser Glu Leu Tyr Asn Lys Pro Leu Tyr Glu Val Asn Ser Thr																
			85					90						95		
Met Thr Leu Ser Cys Asn Gly Glu Thr Lys Tyr Phe Arg Cys Glu Glu																
		100					105						110			
Lys Asn Gly Asn Thr Ser Trp Asn Asp Thr Val Thr Cys Pro Asn Ala																
		115				120						125				
Glu Cys Gln Pro Leu Gln Leu Glu His Gly Ser Cys Gln Pro Val Lys																
	130				135						140					
Glu Lys Tyr Ser Phe Gly Glu Tyr Ile Thr Ile Asn Cys Asp Val Gly																
145				150				155								160
Tyr Glu Val Ile Gly Ala Ser Tyr Ile Ser Cys Thr Ala Asn Ser Trp																
		165					170								175	
Asn Val Ile Pro Ser Cys Gln Gln Lys Cys Asp Ile Pro Ser Leu Ser																
		180					185							190		
Asn Gly Leu Ile Ser Gly Ser Thr Phe Ser Ile Gly Gly Val Ile His																
	195					200					205					
Leu Ser Cys Lys Ser Gly Phe Ile Leu Thr Gly Ser Pro Ser Ser Thr																
	210				215						220					
Cys Ile Asp Gly Lys Trp Asn Pro Ile Leu Pro Thr Cys Val Arg Ser																
225				230				235								240
Asn Glu Lys Phe Asp Pro Val Asp Asp Gly Pro Asp Asp Glu Thr Asp																
		245					250							255		
Leu Ser Lys Leu Ser Lys Asp Val Val Gln Tyr Glu Gln Glu Ile Glu																

tgt tat tat ctg ttg atg cat cta gtt agt ttg tat aaa
 Cys Tyr Tyr Leu Leu Met His Leu Val Ser Leu Tyr Lys
 165 170

519

<210> 396
 <211> 173
 <212> PRT
 <213> vaccinia virus

<400> 396
 Met Ser Ser Ser Val Asp Val Asp Ile Tyr Asp Ala Val Arg Ala Phe
 1 5 10 15
 Leu Leu Arg His Tyr Tyr Asn Lys Arg Phe Ile Val Tyr Gly Arg Ser
 20 25 30
 Asn Ala Ile Leu His Asn Ile Tyr Arg Leu Phe Thr Arg Cys Ala Val
 35 40 45
 Ile Pro Phe Asp Asp Ile Val Arg Thr Met Pro Asn Glu Ser Arg Val
 50 55 60
 Lys Gln Trp Val Met Asp Thr Leu Asn Gly Ile Met Met Asn Glu Arg
 65 70 75 80
 Asp Ile Thr Val Cys Val Gly Thr Gly Ile Leu Phe Met Glu Met Phe
 85 90 95
 Phe Asp Tyr Asn Lys Asn Ser Ile Asn Asn Gln Leu Met Tyr Asp Ile
 100 105 110
 Ile Asn Ser Val Ser Ile Ile Leu Ala Asn Glu Arg Tyr Arg Ser Ala
 115 120 125
 Phe Asn Asp Asp Gly Ile Tyr Ile Arg Arg Asn Met Ile Asn Lys Leu
 130 135 140
 Tyr Gly Tyr Ala Ser Leu Thr Thr Ile Gly Thr Ile Ala Gly Gly Val
 145 150 155 160
 Cys Tyr Tyr Leu Leu Met His Leu Val Ser Leu Tyr Lys
 165 170

<210> 397
 <211> 549
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(549)

<400> 397
 atg tat aaa aaa cta ata acg ttt tta ttt gta ata ggt gca gta gca 48
 Met Tyr Lys Lys Leu Ile Thr Phe Leu Phe Val Ile Gly Ala Val Ala
 1 5 10 15
 tcc tat tcg aat aat gag tac act ccg ttt aat aaa ctg agt gta aaa 96
 Ser Tyr Ser Asn Asn Glu Tyr Thr Pro Phe Asn Lys Leu Ser Val Lys
 20 25 30
 ctc tat ata gat gga gta gat aat ata gaa aat tca tat act gat gat 144
 Leu Tyr Ile Asp Gly Val Asp Asn Ile Glu Asn Ser Tyr Thr Asp Asp
 35 40 45
 aat aat gaa ttg gtg tta aat ttt aaa gag tac aca att tct att att 192
 Asn Asn Glu Leu Val Leu Asn Phe Lys Glu Tyr Thr Ile Ser Ile Ile

50	55	60	
aca gag tca tgc gac gtc gga ttt gat tcc ata gat ata gat gtt ata			240
Thr Glu Ser Cys Asp Val Gly Phe Asp Ser Ile Asp Ile Asp Val Ile			
65	70	75	80
aac gac tat aaa att att gat atg tat acc att gac tcg tct act att			288
Asn Asp Tyr Lys Ile Ile Asp Met Tyr Thr Ile Asp Ser Ser Thr Ile			
	85	90	95
caa cgc aga ggt cac acg tgt aga ata tct acc aaa tta tca tgc cat			336
Gln Arg Arg Gly His Thr Cys Arg Ile Ser Thr Lys Leu Ser Cys His			
	100	105	110
tat gat aag tac cct tat att cac aaa tat gat ggt gat gag cga caa			384
Tyr Asp Lys Tyr Pro Tyr Ile His Lys Tyr Asp Gly Asp Glu Arg Gln			
	115	120	125
tat tct att act gca gag gga aaa tgc tat aaa gga ata aaa tat gaa			432
Tyr Ser Ile Thr Ala Glu Gly Lys Cys Tyr Lys Gly Ile Lys Tyr Glu			
	130	135	140
ata agt atg atc aac gat gat act cta ttg aga aaa cat act ctt aaa			480
Ile Ser Met Ile Asn Asp Asp Thr Leu Leu Arg Lys His Thr Leu Lys			
	145	150	155
att gga tct act tat ata ttt gat cgt cat gga cat agt aat aca tat			528
Ile Gly Ser Thr Tyr Ile Phe Asp Arg His Gly His Ser Asn Thr Tyr			
	165	170	175
tat tca aaa tat gat ttt taa			549
Tyr Ser Lys Tyr Asp Phe *			
	180		

<210> 398

<211> 182

<212> PRT

<213> vaccinia virus

<400> 398

Met Tyr Lys Lys Leu Ile Thr Phe Leu Phe Val Ile Gly Ala Val Ala			
1	5	10	15
Ser Tyr Ser Asn Asn Glu Tyr Thr Pro Phe Asn Lys Leu Ser Val Lys			
	20	25	30
Leu Tyr Ile Asp Gly Val Asp Asn Ile Glu Asn Ser Tyr Thr Asp Asp			
	35	40	45
Asn Asn Glu Leu Val Leu Asn Phe Lys Glu Tyr Thr Ile Ser Ile Ile			
	50	55	60
Thr Glu Ser Cys Asp Val Gly Phe Asp Ser Ile Asp Ile Asp Val Ile			
	65	70	75
Asn Asp Tyr Lys Ile Ile Asp Met Tyr Thr Ile Asp Ser Ser Thr Ile			
	85	90	95
Gln Arg Arg Gly His Thr Cys Arg Ile Ser Thr Lys Leu Ser Cys His			
	100	105	110
Tyr Asp Lys Tyr Pro Tyr Ile His Lys Tyr Asp Gly Asp Glu Arg Gln			
	115	120	125
Tyr Ser Ile Thr Ala Glu Gly Lys Cys Tyr Lys Gly Ile Lys Tyr Glu			
	130	135	140

Ile	Ser	Met	Ile	Asn	Asp	Asp	Thr	Leu	Leu	Arg	Lys	His	Thr	Leu	Lys
145					150					155					160
Ile	Gly	Ser	Thr	Tyr	Ile	Phe	Asp	Arg	His	Gly	His	Ser	Asn	Thr	Tyr
				165					170					175	
Tyr	Ser	Lys	Tyr	Asp	Phe										
			180												

<210> 399
 <211> 816
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(816)

<400> 399																
atg	aga	tat	att	ata	att	ctc	gca	gtt	ttg	ttc	att	aat	agt	ata	cat	48
Met	Arg	Tyr	Ile	Ile	Ile	Leu	Ala	Val	Leu	Phe	Ile	Asn	Ser	Ile	His	
1				5					10					15		
gct aaa ata act agt tat aag ttt gaa tcc gtc aat ttt gat tcc aaa															96	
Ala	Lys	Ile	Thr	Ser	Tyr	Lys	Phe	Glu	Ser	Val	Asn	Phe	Asp	Ser	Lys	
			20					25					30			
att gaa tgg act ggg gat ggt cta tac aat ata tcc ctt aaa aat tat															144	
Ile	Glu	Trp	Thr	Gly	Asp	Gly	Leu	Tyr	Asn	Ile	Ser	Leu	Lys	Asn	Tyr	
		35					40					45				
ggc atc aag acg tgg caa aca atg tat aca aat gta cca gaa gga aca															192	
Gly	Ile	Lys	Thr	Trp	Gln	Thr	Met	Tyr	Thr	Asn	Val	Pro	Glu	Gly	Thr	
		50				55					60					
tac gac ata tcc gca ttt cca aag aat gat ttc gta tct ttc tgg gtt															240	
Tyr	Asp	Ile	Ser	Ala	Phe	Pro	Lys	Asn	Asp	Phe	Val	Ser	Phe	Trp	Val	
		65			70				75					80		
aaa ttt gaa caa ggc gat tat aaa gtg gaa gag tat tgt acg gga cta															288	
Lys	Phe	Glu	Gln	Gly	Asp	Tyr	Lys	Val	Glu	Glu	Tyr	Cys	Thr	Gly	Leu	
			85					90					95			
tgc gtc gaa gta aaa att gga cca ccg act gta aca tta act gaa tac															336	
Cys	Val	Glu	Val	Lys	Ile	Gly	Pro	Pro	Thr	Val	Thr	Leu	Thr	Glu	Tyr	
			100				105						110			
gac gac cat atc aat ttg tac atc gag cat ccg tat gct act aga ggt															384	
Asp	Asp	His	Ile	Asn	Leu	Tyr	Ile	Glu	His	Pro	Tyr	Ala	Thr	Arg	Gly	
		115				120						125				
agc aaa aag att cct att tac aaa cgc ggt gac atg tgt gat atc tac															432	
Ser	Lys	Lys	Ile	Pro	Ile	Tyr	Lys	Arg	Gly	Asp	Met	Cys	Asp	Ile	Tyr	
		130				135					140					
ttg ttg tat acg gct aac ttc aca ttc gga gat tct aaa gaa cca gta															480	
Leu	Leu	Tyr	Thr	Ala	Asn	Phe	Thr	Phe	Gly	Asp	Ser	Lys	Glu	Pro	Val	
145					150					155					160	
cca tat gat atc gat gac tac gat tgc acg tct aca ggt tgc agc ata															528	

Pro Tyr Asp Ile	Asp Asp Tyr Asp Cys Thr Ser Thr Gly Cys Ser Ile	165	170	175	
gac ttt gtc aca aca gaa aaa gtg tgc gtg aca gca cag gga gcc aca	576				
Asp Phe Val Thr Thr Glu Lys Val Cys Val Thr Ala Gln Gly Ala Thr					
	180	185	190		
gaa ggg ttt ctc gaa aaa att act cca tgg agt tcg gaa gta tgt ctg	624				
Glu Gly Phe Leu Glu Lys Ile Thr Pro Trp Ser Ser Glu Val Cys Leu					
	195	200	205		
aca cct aaa aag agt gta tat aca tgc gca att aga tcc aaa gaa gat	672				
Thr Pro Lys Lys Ser Val Tyr Thr Cys Ala Ile Arg Ser Lys Glu Asp					
	210	215	220		
gtt ccc aat ttc aag gac aaa atg gcc aga gtt atc aag aga aaa ttt	720				
Val Pro Asn Phe Lys Asp Lys Met Ala Arg Val Ile Lys Arg Lys Phe					
	225	230	235	240	
aat aaa cag tct caa tct tat tta act aaa ttt ctc ggt agc aca tca	768				
Asn Lys Gln Ser Gln Ser Tyr Leu Thr Lys Phe Leu Gly Ser Thr Ser					
	245	250	255		
aat gat gtt acc act ttt ctt agc atg ctt aac ttg act aaa tat tca	816				
Asn Asp Val Thr Thr Phe Leu Ser Met Leu Asn Leu Thr Lys Tyr Ser					
	260	265	270		

<210> 400
 <211> 272
 <212> PRT
 <213> vaccinia virus

<400> 400	
Met Arg Tyr Ile Ile Ile Leu Ala Val Leu Phe Ile Asn Ser Ile His	
1	5 10 15
Ala Lys Ile Thr Ser Tyr Lys Phe Glu Ser Val Asn Phe Asp Ser Lys	
	20 25 30
Ile Glu Trp Thr Gly Asp Gly Leu Tyr Asn Ile Ser Leu Lys Asn Tyr	
	35 40 45
Gly Ile Lys Thr Trp Gln Thr Met Tyr Thr Asn Val Pro Glu Gly Thr	
	50 55 60
Tyr Asp Ile Ser Ala Phe Pro Lys Asn Asp Phe Val Ser Phe Trp Val	
	65 70 75 80
Lys Phe Glu Gln Gly Asp Tyr Lys Val Glu Glu Tyr Cys Thr Gly Leu	
	85 90 95
Cys Val Glu Val Lys Ile Gly Pro Pro Thr Val Thr Leu Thr Glu Tyr	
	100 105 110
Asp Asp His Ile Asn Leu Tyr Ile Glu His Pro Tyr Ala Thr Arg Gly	
	115 120 125
Ser Lys Lys Ile Pro Ile Tyr Lys Arg Gly Asp Met Cys Asp Ile Tyr	
	130 135 140
Leu Leu Tyr Thr Ala Asn Phe Thr Phe Gly Asp Ser Lys Glu Pro Val	
	145 150 155 160
Pro Tyr Asp Ile Asp Asp Tyr Asp Cys Thr Ser Thr Gly Cys Ser Ile	
	165 170 175
Asp Phe Val Thr Thr Glu Lys Val Cys Val Thr Ala Gln Gly Ala Thr	
	180 185 190

Glu	Gly	Phe	Leu	Glu	Lys	Ile	Thr	Pro	Trp	Ser	Ser	Glu	Val	Cys	Leu
		195					200					205			
Thr	Pro	Lys	Lys	Ser	Val	Tyr	Thr	Cys	Ala	Ile	Arg	Ser	Lys	Glu	Asp
	210					215					220				
Val	Pro	Asn	Phe	Lys	Asp	Lys	Met	Ala	Arg	Val	Ile	Lys	Arg	Lys	Phe
225					230					235					240
Asn	Lys	Gln	Ser	Gln	Ser	Tyr	Leu	Thr	Lys	Phe	Leu	Gly	Ser	Thr	Ser
				245					250					255	
Asn	Asp	Val	Thr	Thr	Phe	Leu	Ser	Met	Leu	Asn	Leu	Thr	Lys	Tyr	Ser
			260					265					270		

<210> 401
 <211> 234
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(234)

<400> 401																
atg	agg	tcc	ctg	att	ata	gtc	ctt	ctg	ttc	ccc	tct	atc	atc	tac	tcc	48
Met	Arg	Ser	Leu	Ile	Ile	Val	Leu	Leu	Phe	Pro	Ser	Ile	Ile	Tyr	Ser	
1				5					10					15		
atg	tct	att	aga	cga	tgt	gag	aag	act	gaa	gag	gaa	aca	tgg	gga	ttg	96
Met	Ser	Ile	Arg	Arg	Cys	Glu	Lys	Thr	Glu	Glu	Glu	Thr	Trp	Gly	Leu	
			20					25					30			
aaa	ata	ggg	ttg	tgt	ata	att	gcc	aaa	gat	ttt	tat	ccc	gaa	aga	act	144
Lys	Ile	Gly	Leu	Cys	Ile	Ile	Ala	Lys	Asp	Phe	Tyr	Pro	Glu	Arg	Thr	
		35					40					45				
gat	tgc	agt	gtt	cat	ctc	cca	act	gca	agt	gaa	gga	ttg	ata	act	gaa	192
Asp	Cys	Ser	Val	His	Leu	Pro	Thr	Ala	Ser	Glu	Gly	Leu	Ile	Thr	Glu	
	50					55					60					
ggc	aat	gga	ttc	agg	gat	ata	cga	aac	acc	gat	aaa	tta	taa			234
Gly	Asn	Gly	Phe	Arg	Asp	Ile	Arg	Asn	Thr	Asp	Lys	Leu	*			
65					70					75						

<210> 402
 <211> 77
 <212> PRT
 <213> vaccinia virus

<400> 402															
Met	Arg	Ser	Leu	Ile	Ile	Val	Leu	Leu	Phe	Pro	Ser	Ile	Ile	Tyr	Ser
1				5					10					15	
Met	Ser	Ile	Arg	Arg	Cys	Glu	Lys	Thr	Glu	Glu	Glu	Thr	Trp	Gly	Leu
			20					25					30		
Lys	Ile	Gly	Leu	Cys	Ile	Ile	Ala	Lys	Asp	Phe	Tyr	Pro	Glu	Arg	Thr
		35					40					45			
Asp	Cys	Ser	Val	His	Leu	Pro	Thr	Ala	Ser	Glu	Gly	Leu	Ile	Thr	Glu
	50					55					60				
Gly	Asn	Gly	Phe	Arg	Asp	Ile	Arg	Asn	Thr	Asp	Lys	Leu			

65

70

75

<210> 403
 <211> 501
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(501)

<400> 403
 atg gat tca ggg ata tac gaa aca ccg ata aat tat aaa aaa agc aat 48
 Met Asp Ser Gly Ile Tyr Glu Thr Pro Ile Asn Tyr Lys Lys Ser Asn
 1 5 10 15
 gtg tcc gct gtt tcc gtt aat aat act att ttc gta act ggc gga tta 96
 Val Ser Ala Val Ser Val Asn Asn Thr Ile Phe Val Thr Gly Gly Leu
 20 25 30
 ttc ata aat aac tct aat agc acg atc gtg gtt aac aat atg gaa aaa 144
 Phe Ile Asn Asn Ser Asn Ser Thr Ile Val Val Asn Asn Met Glu Lys
 35 40 45
 ctt gac att tat aaa gac aaa caa tgg tcg att ata gaa atg cct atg 192
 Leu Asp Ile Tyr Lys Asp Lys Gln Trp Ser Ile Ile Glu Met Pro Met
 50 55 60
 gct agg gta tat cac ggc atc gac tcg aca ttt gga atg tta tat ttt 240
 Ala Arg Val Tyr His Gly Ile Asp Ser Thr Phe Gly Met Leu Tyr Phe
 65 70 75 80
 gcc gga ggt cta tcc gtt acc gaa caa tat ggt aat tta gag aaa aac 288
 Ala Gly Gly Leu Ser Val Thr Glu Gln Tyr Gly Asn Leu Glu Lys Asn
 85 90 95
 aac gag ata tct tgt tac aat cct aga acg aat aag tgg ttt gat att 336
 Asn Glu Ile Ser Cys Tyr Asn Pro Arg Thr Asn Lys Trp Phe Asp Ile
 100 105 110
 tca tat act att tat aag ata tcc ata tca tca ttg tgt aaa cta aat 384
 Ser Tyr Thr Ile Tyr Lys Ile Ser Ile Ser Ser Leu Cys Lys Leu Asn
 115 120 125
 aac gtc ttc tat gta ttt agt aag gac att gga tat gtg gaa aag tat 432
 Asn Val Phe Tyr Val Phe Ser Lys Asp Ile Gly Tyr Val Glu Lys Tyr
 130 135 140
 gat ggt gca tgg aag tta gta cat gat cgt ctc ccc gct ata aag gca 480
 Asp Gly Ala Trp Lys Leu Val His Asp Arg Leu Pro Ala Ile Lys Ala
 145 150 155 160
 tta tca act tct cct tat tga 501
 Leu Ser Thr Ser Pro Tyr *
 165

<210> 404

<211> 166
 <212> PRT
 <213> vaccinia virus

<400> 404
 Met Asp Ser Gly Ile Tyr Glu Thr Pro Ile Asn Tyr Lys Lys Ser Asn
 1 5 10 15
 Val Ser Ala Val Ser Val Asn Asn Thr Ile Phe Val Thr Gly Gly Leu
 20 25 30
 Phe Ile Asn Asn Ser Asn Ser Thr Ile Val Val Asn Asn Met Glu Lys
 35 40 45
 Leu Asp Ile Tyr Lys Asp Lys Gln Trp Ser Ile Ile Glu Met Pro Met
 50 55 60
 Ala Arg Val Tyr His Gly Ile Asp Ser Thr Phe Gly Met Leu Tyr Phe
 65 70 75 80
 Ala Gly Gly Leu Ser Val Thr Glu Gln Tyr Gly Asn Leu Glu Lys Asn
 85 90 95
 Asn Glu Ile Ser Cys Tyr Asn Pro Arg Thr Asn Lys Trp Phe Asp Ile
 100 105 110
 Ser Tyr Thr Ile Tyr Lys Ile Ser Ile Ser Ser Leu Cys Lys Leu Asn
 115 120 125
 Asn Val Phe Tyr Val Phe Ser Lys Asp Ile Gly Tyr Val Glu Lys Tyr
 130 135 140
 Asp Gly Ala Trp Lys Leu Val His Asp Arg Leu Pro Ala Ile Lys Ala
 145 150 155 160
 Leu Ser Thr Ser Pro Tyr
 165

<210> 405
 <211> 219
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(219)

<400> 405
 atg gat aca gat gtt aca aat gta gaa gat atc ata aat gaa ata gat 48
 Met Asp Thr Asp Val Thr Asn Val Glu Asp Ile Ile Asn Glu Ile Asp
 1 5 10 15
 aga gag aaa gaa gaa ata cta aaa aat gta gaa att gaa aat aat aaa 96
 Arg Glu Lys Glu Glu Ile Leu Lys Asn Val Glu Ile Glu Asn Asn Lys
 20 25 30
 aac att aac aag aat cat ccc aat gaa tat att aga gaa gca ctc gtt 144
 Asn Ile Asn Lys Asn His Pro Asn Glu Tyr Ile Arg Glu Ala Leu Val
 35 40 45
 att aat acc agt agt aat agt gat tcc att gat aaa gaa gtt ata gaa 192
 Ile Asn Thr Ser Ser Asn Ser Asp Ser Ile Asp Lys Glu Val Ile Glu
 50 55 60
 tgt atc tgt cac gat gta gga ata tag 219
 Cys Ile Cys His Asp Val Gly Ile *
 65 70

<210> 406
 <211> 72
 <212> PRT
 <213> vaccinia virus

<400> 406
 Met Asp Thr Asp Val Thr Asn Val Glu Asp Ile Ile Asn Glu Ile Asp
 1 5 10 15
 Arg Glu Lys Glu Glu Ile Leu Lys Asn Val Glu Ile Glu Asn Asn Lys
 20 25 30
 Asn Ile Asn Lys Asn His Pro Asn Glu Tyr Ile Arg Glu Ala Leu Val
 35 40 45
 Ile Asn Thr Ser Ser Asn Ser Asp Ser Ile Asp Lys Glu Val Ile Glu
 50 55 60
 Cys Ile Cys His Asp Val Gly Ile
 65 70

<210> 407
 <211> 852
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(852)

<400> 407
 atg gaa tcc ttc aag tat tgt ttt gat aac gat ggc aag aaa tgg att 48
 Met Glu Ser Phe Lys Tyr Cys Phe Asp Asn Asp Gly Lys Lys Trp Ile
 1 5 10 15
 atc gga aat act tta tat tct ggt aat tca ata cta tat aag gtc aga 96
 Ile Gly Asn Thr Leu Tyr Ser Gly Asn Ser Ile Leu Tyr Lys Val Arg
 20 25 30
 aaa aat ttc act agt tcg ttc tac aat tac gta atg aag ata gat cac 144
 Lys Asn Phe Thr Ser Ser Phe Tyr Asn Tyr Val Met Lys Ile Asp His
 35 40 45
 aaa tca cac aag cca ttg ttg tct gaa ata cga ttc tat ata tct gta 192
 Lys Ser His Lys Pro Leu Leu Ser Glu Ile Arg Phe Tyr Ile Ser Val
 50 55 60
 ttg gat cct ttg act atc gac aac tgg aca cgg gaa cgt ggt ata aag 240
 Leu Asp Pro Leu Thr Ile Asp Asn Trp Thr Arg Glu Arg Gly Ile Lys
 65 70 75 80
 tat ttg gct att cca gat ctg tat gga att gga gaa acc gat gat tat 288
 Tyr Leu Ala Ile Pro Asp Leu Tyr Gly Ile Gly Glu Thr Asp Asp Tyr
 85 90 95
 atg ttc ttc gtt ata aaa aat tcg gga aga gta ttc gcc cca aag gat 336
 Met Phe Phe Val Ile Lys Asn Ser Gly Arg Val Phe Ala Pro Lys Asp
 100 105 110
 act gaa tca gtc ttc gaa gca tgt gtc act atg ata aac acg tta gag 384
 Thr Glu Ser Val Phe Glu Ala Cys Val Thr Met Ile Asn Thr Leu Glu
 115 120 125

ttt ata cac tct cga gga ttt acc cat gga aaa ata gaa ccg agg aat	432
Phe Ile His Ser Arg Gly Phe Thr His Gly Lys Ile Glu Pro Arg Asn	
130 135 140	
ata ctg att aga aat aaa cgt ctt tca cta att gac tat tct aga act	480
Ile Leu Ile Arg Asn Lys Arg Leu Ser Leu Ile Asp Tyr Ser Arg Thr	
145 150 155 160	
aac aaa cta tac aag agt gga aac tca cat ata gat tac aac gag gac	528
Asn Lys Leu Tyr Lys Ser Gly Asn Ser His Ile Asp Tyr Asn Glu Asp	
165 170 175	
atg ata act tca gga aat atc aat tat atg tgt gta gac aat cat ctt	576
Met Ile Thr Ser Gly Asn Ile Asn Tyr Met Cys Val Asp Asn His Leu	
180 185 190	
gga gca aca gtt tca aaa cga gga gat tta gaa atg ttg gga tat tgc	624
Gly Ala Thr Val Ser Lys Arg Gly Asp Leu Glu Met Leu Gly Tyr Cys	
195 200 205	
atg ata gaa tgg ttc ggt ggc aaa ctt cca tgg aaa aac gaa agt agt	672
Met Ile Glu Trp Phe Gly Gly Lys Leu Pro Trp Lys Asn Glu Ser Ser	
210 215 220	
ata aaa gta ata aaa caa aaa aaa gaa tat aaa aaa ttt ata gct act	720
Ile Lys Val Ile Lys Gln Lys Lys Glu Tyr Lys Lys Phe Ile Ala Thr	
225 230 235 240	
ttc ttt gag gac tgt ttt cct gaa gga aat gaa cct ctg gaa tta gtt	768
Phe Phe Glu Asp Cys Phe Pro Glu Gly Asn Glu Pro Leu Glu Leu Val	
245 250 255	
aga tat ata gaa tta gta tac acg tta gat tat tct caa act cct aat	816
Arg Tyr Ile Glu Leu Val Tyr Thr Leu Asp Tyr Ser Gln Thr Pro Asn	
260 265 270	
tat gac aga cta cgt aaa ctg ttt ata caa gat tga	852
Tyr Asp Arg Leu Arg Lys Leu Phe Ile Gln Asp *	
275 280	

<210> 408
 <211> 283
 <212> PRT
 <213> vaccinia virus

<400> 408

Met Glu Ser Phe Lys Tyr Cys Phe Asp Asn Asp Gly Lys Lys Trp Ile	
1 5 10 15	
Ile Gly Asn Thr Leu Tyr Ser Gly Asn Ser Ile Leu Tyr Lys Val Arg	
20 25 30	
Lys Asn Phe Thr Ser Ser Phe Tyr Asn Tyr Val Met Lys Ile Asp His	
35 40 45	
Lys Ser His Lys Pro Leu Leu Ser Glu Ile Arg Phe Tyr Ile Ser Val	
50 55 60	
Leu Asp Pro Leu Thr Ile Asp Asn Trp Thr Arg Glu Arg Gly Ile Lys	
65 70 75 80	
Tyr Leu Ala Ile Pro Asp Leu Tyr Gly Ile Gly Glu Thr Asp Asp Tyr	

				85					90				95				
Met	Phe	Phe	Val	Ile	Lys	Asn	Ser	Gly	Arg	Val	Phe	Ala	Pro	Lys	Asp		
			100					105					110				
Thr	Glu	Ser	Val	Phe	Glu	Ala	Cys	Val	Thr	Met	Ile	Asn	Thr	Leu	Glu		
		115					120					125					
Phe	Ile	His	Ser	Arg	Gly	Phe	Thr	His	Gly	Lys	Ile	Glu	Pro	Arg	Asn		
	130				135						140						
Ile	Leu	Ile	Arg	Asn	Lys	Arg	Leu	Ser	Leu	Ile	Asp	Tyr	Ser	Arg	Thr		
145				150					155						160		
Asn	Lys	Leu	Tyr	Lys	Ser	Gly	Asn	Ser	His	Ile	Asp	Tyr	Asn	Glu	Asp		
			165				170						175				
Met	Ile	Thr	Ser	Gly	Asn	Ile	Asn	Tyr	Met	Cys	Val	Asp	Asn	His	Leu		
		180					185						190				
Gly	Ala	Thr	Val	Ser	Lys	Arg	Gly	Asp	Leu	Glu	Met	Leu	Gly	Tyr	Cys		
	195						200					205					
Met	Ile	Glu	Trp	Phe	Gly	Gly	Lys	Leu	Pro	Trp	Lys	Asn	Glu	Ser	Ser		
	210				215						220						
Ile	Lys	Val	Ile	Lys	Gln	Lys	Lys	Glu	Tyr	Lys	Lys	Phe	Ile	Ala	Thr		
225				230					235						240		
Phe	Phe	Glu	Asp	Cys	Phe	Pro	Glu	Gly	Asn	Glu	Pro	Leu	Glu	Leu	Val		
			245					250					255				
Arg	Tyr	Ile	Glu	Leu	Val	Tyr	Thr	Leu	Asp	Tyr	Ser	Gln	Thr	Pro	Asn		
		260					265						270				
Tyr	Asp	Arg	Leu	Arg	Lys	Leu	Phe	Ile	Gln	Asp							
	275					280											

<210> 409

<211> 381

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(381)

<400> 409

atg gat atc ttc agg gaa atc gca tct tct atg aaa gga gag aat gta	48
Met Asp Ile Phe Arg Glu Ile Ala Ser Ser Met Lys Gly Glu Asn Val	
1 5 10 15	
ttt att tct cca gcg tca atc tcg tca gta ttg aca ata ctg tat tat	96
Phe Ile Ser Pro Ala Ser Ile Ser Ser Val Leu Thr Ile Leu Tyr Tyr	
20 25 30	
gga gct aat gga tcc act gct gaa cag cta tca aaa tat gta gaa acg	144
Gly Ala Asn Gly Ser Thr Ala Glu Gln Leu Ser Lys Tyr Val Glu Thr	
35 40 45	
gag gag aac acg gat aag gtt agc gct cag aat atc tca ttc aaa tcc	192
Glu Glu Asn Thr Asp Lys Val Ser Ala Gln Asn Ile Ser Phe Lys Ser	
50 55 60	
atg aat aaa gta tat ggg cga tat tct gcc gtg ttt aaa gat tcc ttt	240
Met Asn Lys Val Tyr Gly Arg Tyr Ser Ala Val Phe Lys Asp Ser Phe	
65 70 75 80	
ttg aga aaa att ggc gat aag ttt caa act gtt gac ttc act gat tgt	288
Leu Arg Lys Ile Gly Asp Lys Phe Gln Thr Val Asp Phe Thr Asp Cys	

85										90					95					
cgc	act	ata	gat	gca	atc	aac	aag	tgt	gta	gat	atc	ttt	act	gag	ggg	336				
Arg	Thr	Ile	Asp	Ala	Ile	Asn	Lys	Cys	Val	Asp	Ile	Phe	Thr	Glu	Gly					
			100					105					110							
aaa	atc	aat	cca	cta	ttg	gat	gaa	cca	ttg	tct	cct	agc	aat	tag		381				
Lys	Ile	Asn	Pro	Leu	Leu	Asp	Glu	Pro	Leu	Ser	Pro	Ser	Asn	*						
		115					120					125								

<210> 410
 <211> 126
 <212> PRT
 <213> vaccinia virus

<400> 410

Met	Asp	Ile	Phe	Arg	Glu	Ile	Ala	Ser	Ser	Met	Lys	Gly	Glu	Asn	Val
1				5					10					15	
Phe	Ile	Ser	Pro	Ala	Ser	Ile	Ser	Ser	Val	Leu	Thr	Ile	Leu	Tyr	Tyr
			20					25					30		
Gly	Ala	Asn	Gly	Ser	Thr	Ala	Glu	Gln	Leu	Ser	Lys	Tyr	Val	Glu	Thr
		35					40					45			
Glu	Glu	Asn	Thr	Asp	Lys	Val	Ser	Ala	Gln	Asn	Ile	Ser	Phe	Lys	Ser
	50					55					60				
Met	Asn	Lys	Val	Tyr	Gly	Arg	Tyr	Ser	Ala	Val	Phe	Lys	Asp	Ser	Phe
65					70					75					80
Leu	Arg	Lys	Ile	Gly	Asp	Lys	Phe	Gln	Thr	Val	Asp	Phe	Thr	Asp	Cys
				85					90					95	
Arg	Thr	Ile	Asp	Ala	Ile	Asn	Lys	Cys	Val	Asp	Ile	Phe	Thr	Glu	Gly
			100					105					110		
Lys	Ile	Asn	Pro	Leu	Leu	Asp	Glu	Pro	Leu	Ser	Pro	Ser	Asn		
		115					120					125			

<210> 411
 <211> 669
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(669)

<400> 411

atg	aac	cat	tgt	ctc	cta	gca	att	agt	gcc	gta	tac	ttt	aaa	gca	aaa	48
Met	Asn	His	Cys	Leu	Leu	Ala	Ile	Ser	Ala	Val	Tyr	Phe	Lys	Ala	Lys	
1				5					10					15		
tgg	ttg	acg	cca	ttc	gaa	aag	gaa	ttt	acc	agt	gat	tat	ccc	ttt	tac	96
Trp	Leu	Thr	Pro	Phe	Glu	Lys	Glu	Phe	Thr	Ser	Asp	Tyr	Pro	Phe	Tyr	
			20					25					30			
gta	tct	ccg	acg	gaa	atg	gta	gat	gta	agt	atg	atg	tct	atg	tac	ggc	144
Val	Ser	Pro	Thr	Glu	Met	Val	Asp	Val	Ser	Met	Met	Ser	Met	Tyr	Gly	
		35					40					45				
aag	gca	ttt	aat	cac	gca	tct	gta	aag	gaa	tca	ttc	ggc	aac	ttt	tca	192

Lys	Ala	Phe	Asn	His	Ala	Ser	Val	Lys	Glu	Ser	Phe	Gly	Asn	Phe	Ser		
50						55					60						
atc	ata	gaa	ctg	cca	tat	gtt	gga	gat	act	agt	atg	atg	gtc	att	ctt	240	
Ile	Ile	Glu	Leu	Pro	Tyr	Val	Gly	Asp	Thr	Ser	Met	Met	Val	Ile	Leu		
65					70					75					80		
cca	gac	aag	att	gat	gga	tta	gaa	tcc	ata	gaa	caa	aat	cta	aca	gat	288	
Pro	Asp	Lys	Ile	Asp	Gly	Leu	Glu	Ser	Ile	Glu	Gln	Asn	Leu	Thr	Asp		
				85					90					95			
aca	aat	ttt	aag	aaa	tgg	tgt	gac	ttt	atg	gat	gct	atg	ttt	ata	gat	336	
Thr	Asn	Phe	Lys	Lys	Trp	Cys	Asp	Phe	Met	Asp	Ala	Met	Phe	Ile	Asp		
			100					105					110				
gtt	cac	att	ccc	aag	ttt	aag	gta	aca	ggc	tcg	tat	aat	ctg	gtg	gat	384	
Val	His	Ile	Pro	Lys	Phe	Lys	Val	Thr	Gly	Ser	Tyr	Asn	Leu	Val	Asp		
		115					120					125					
act	cta	gta	aag	tca	gga	ctg	aca	gag	gtg	ttc	ggt	tca	act	gga	gat	432	
Thr	Leu	Val	Lys	Ser	Gly	Leu	Thr	Glu	Val	Phe	Gly	Ser	Thr	Gly	Asp		
		130				135					140						
tat	agc	aat	atg	tgt	aat	tca	gat	gtg	agt	gtc	gac	gct	atg	atc	cac	480	
Tyr	Ser	Asn	Met	Cys	Asn	Ser	Asp	Val	Ser	Val	Asp	Ala	Met	Ile	His		
145					150					155					160		
aaa	acg	tat	ata	gat	gtc	aat	gaa	gag	tat	aca	gaa	gca	gct	gca	gca	528	
Lys	Thr	Tyr	Ile	Asp	Val	Asn	Glu	Glu	Tyr	Thr	Glu	Ala	Ala	Ala	Ala		
				165					170					175			
act	tgt	gca	ctg	gtg	tca	gac	tgt	gca	tca	aca	att	aca	aat	gag	ttc	576	
Thr	Cys	Ala	Leu	Val	Ser	Asp	Cys	Ala	Ser	Thr	Ile	Thr	Asn	Glu	Phe		
			180					185					190				
tgt	gta	gat	cat	ccg	ttc	atc	tat	gtg	att	agg	cat	gtt	gat	ggc	aaa	624	
Cys	Val	Asp	His	Pro	Phe	Ile	Tyr	Val	Ile	Arg	His	Val	Asp	Gly	Lys		
		195					200					205					
att	ctt	ttc	gtt	ggt	aga	tat	tgc	tct	cca	aca	act	aat	tgt	taa		669	
Ile	Leu	Phe	Val	Gly	Arg	Tyr	Cys	Ser	Pro	Thr	Thr	Asn	Cys	*			
	210					215					220						

<210> 412
 <211> 222
 <212> PRT
 <213> vaccinia virus

<400> 412
 Met Asn His Cys Leu Leu Ala Ile Ser Ala Val Tyr Phe Lys Ala Lys
 1 5 10 15
 Trp Leu Thr Pro Phe Glu Lys Glu Phe Thr Ser Asp Tyr Pro Phe Tyr
 20 25 30
 Val Ser Pro Thr Glu Met Val Asp Val Ser Met Met Ser Met Tyr Gly
 35 40 45
 Lys Ala Phe Asn His Ala Ser Val Lys Glu Ser Phe Gly Asn Phe Ser
 50 55 60

Ile	Ile	Glu	Leu	Pro	Tyr	Val	Gly	Asp	Thr	Ser	Met	Met	Val	Ile	Leu
65					70					75				80	
Pro	Asp	Lys	Ile	Asp	Gly	Leu	Glu	Ser	Ile	Glu	Gln	Asn	Leu	Thr	Asp
				85					90					95	
Thr	Asn	Phe	Lys	Lys	Trp	Cys	Asp	Phe	Met	Asp	Ala	Met	Phe	Ile	Asp
			100					105					110		
Val	His	Ile	Pro	Lys	Phe	Lys	Val	Thr	Gly	Ser	Tyr	Asn	Leu	Val	Asp
		115					120					125			
Thr	Leu	Val	Lys	Ser	Gly	Leu	Thr	Glu	Val	Phe	Gly	Ser	Thr	Gly	Asp
	130					135					140				
Tyr	Ser	Asn	Met	Cys	Asn	Ser	Asp	Val	Ser	Val	Asp	Ala	Met	Ile	His
145					150					155				160	
Lys	Thr	Tyr	Ile	Asp	Val	Asn	Glu	Glu	Tyr	Thr	Glu	Ala	Ala	Ala	Ala
				165					170					175	
Thr	Cys	Ala	Leu	Val	Ser	Asp	Cys	Ala	Ser	Thr	Ile	Thr	Asn	Glu	Phe
			180					185					190		
Cys	Val	Asp	His	Pro	Phe	Ile	Tyr	Val	Ile	Arg	His	Val	Asp	Gly	Lys
		195					200					205			
Ile	Leu	Phe	Val	Gly	Arg	Tyr	Cys	Ser	Pro	Thr	Thr	Asn	Cys		
	210					215						220			

<210> 413
 <211> 450
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(450)

<400> 413																
atg	acg	gcc	aac	ttt	agt	acc	cac	gtc	ttt	tca	cca	cag	cac	tgt	gga	48
Met	Thr	Ala	Asn	Phe	Ser	Thr	His	Val	Phe	Ser	Pro	Gln	His	Cys	Gly	
1				5					10					15		
tgt	gac	aga	ctg	acc	agt	att	gat	gac	gtc	aaa	caa	tgt	ttg	act	gaa	96
Cys	Asp	Arg	Leu	Thr	Ser	Ile	Asp	Asp	Val	Lys	Gln	Cys	Leu	Thr	Glu	
			20					25					30			
tat	att	tat	tgg	tcg	tcc	tat	gca	tac	cgc	aac	agg	caa	tgc	gct	gga	144
Tyr	Ile	Tyr	Trp	Ser	Ser	Tyr	Ala	Tyr	Arg	Asn	Arg	Gln	Cys	Ala	Gly	
			35				40					45				
cag	ttg	tat	tcc	aca	ctc	ctc	tct	ttt	aga	gat	gat	gcg	gaa	tta	gtg	192
Gln	Leu	Tyr	Ser	Thr	Leu	Leu	Ser	Phe	Arg	Asp	Asp	Ala	Glu	Leu	Val	
	50					55					60					
ttc	atc	gac	att	cgc	gag	ctg	gta	aaa	cat	atg	ccg	tgg	gat	gat	gtc	240
Phe	Ile	Asp	Ile	Arg	Glu	Leu	Val	Lys	His	Met	Pro	Trp	Asp	Asp	Val	
	65				70					75					80	
aaa	gat	tgt	gca	gaa	atc	atc	cgt	tgt	tat	ata	ccg	gat	gag	caa	aaa	288
Lys	Asp	Cys	Ala	Glu	Ile	Ile	Arg	Cys	Tyr	Ile	Pro	Asp	Glu	Gln	Lys	
			85						90					95		
acc	atc	aga	gag	att	tcg	gcc	atc	atc	gga	ctt	tgt	gca	tat	gct	gct	336
Thr	Ile	Arg	Glu	Ile	Ser	Ala	Ile	Ile	Gly	Leu	Cys	Ala	Tyr	Ala	Ala	
			100					105					110			

act tac tgg gga ggt gaa gac cat ccc act agt aac agt ctg aac gca 384
 Thr Tyr Trp Gly Gly Glu Asp His Pro Thr Ser Asn Ser Leu Asn Ala
 115 120 125

ttg ttt gtg atg ctt gag atg cta aat tac gtg gat tat aac atc ata 432
 Leu Phe Val Met Leu Glu Met Leu Asn Tyr Val Asp Tyr Asn Ile Ile
 130 135 140

ttc cgg cgt atg aat tga 450
 Phe Arg Arg Met Asn *
 145

<210> 414
 <211> 149
 <212> PRT
 <213> vaccinia virus

<400> 414
 Met Thr Ala Asn Phe Ser Thr His Val Phe Ser Pro Gln His Cys Gly
 1 5 10 15
 Cys Asp Arg Leu Thr Ser Ile Asp Asp Val Lys Gln Cys Leu Thr Glu
 20 25 30
 Tyr Ile Tyr Trp Ser Ser Tyr Ala Tyr Arg Asn Arg Gln Cys Ala Gly
 35 40 45
 Gln Leu Tyr Ser Thr Leu Leu Ser Phe Arg Asp Asp Ala Glu Leu Val
 50 55 60
 Phe Ile Asp Ile Arg Glu Leu Val Lys His Met Pro Trp Asp Asp Val
 65 70 75 80
 Lys Asp Cys Ala Glu Ile Ile Arg Cys Tyr Ile Pro Asp Glu Gln Lys
 85 90 95
 Thr Ile Arg Glu Ile Ser Ala Ile Ile Gly Leu Cys Ala Tyr Ala Ala
 100 105 110
 Thr Tyr Trp Gly Gly Glu Asp His Pro Thr Ser Asn Ser Leu Asn Ala
 115 120 125
 Leu Phe Val Met Leu Glu Met Leu Asn Tyr Val Asp Tyr Asn Ile Ile
 130 135 140
 Phe Arg Arg Met Asn
 145

<210> 415
 <211> 981
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(981)

<400> 415
 atg agt ata cta cct att ata ttt ctt tct ata ttt ttt tat tct tca 48
 Met Ser Ile Leu Pro Ile Ile Phe Leu Ser Ile Phe Phe Tyr Ser Ser
 1 5 10 15

ttc gtt cag act ttt aac gcg tct gaa tgt atc gac aaa ggg caa tat 96
 Phe Val Gln Thr Phe Asn Ala Ser Glu Cys Ile Asp Lys Gly Gln Tyr
 20 25 30

ttt gca tca ttc atg gag tta gaa aac gag cca gta atc tta cca tgt	144
Phe Ala Ser Phe Met Glu Leu Glu Asn Glu Pro Val Ile Leu Pro Cys	
35 40 45	
cct caa ata aat acg cta tca tcc gga tat aat ata tta gat att tta	192
Pro Gln Ile Asn Thr Leu Ser Ser Gly Tyr Asn Ile Leu Asp Ile Leu	
50 55 60	
tgg gaa aaa cga gga gcg gat aat gat aga att ata ccg ata gat aat	240
Trp Glu Lys Arg Gly Ala Asp Asn Asp Arg Ile Ile Pro Ile Asp Asn	
65 70 75 80	
ggt agc aat atg cta att ctg aac ccg aca caa tca gac tct ggt att	288
Gly Ser Asn Met Leu Ile Leu Asn Pro Thr Gln Ser Asp Ser Gly Ile	
85 90 95	
tat ata tgc att acc acg aac gaa acc tac tgt gac atg atg tcg tta	336
Tyr Ile Cys Ile Thr Thr Asn Glu Thr Tyr Cys Asp Met Met Ser Leu	
100 105 110	
aat ttg aca atc gtg tct gtc tca gaa tca aat ata gat ctt atc tcg	384
Asn Leu Thr Ile Val Ser Val Ser Glu Ser Asn Ile Asp Leu Ile Ser	
115 120 125	
tat cca caa ata gta aat gag aga tct act ggc gaa atg gta tgt ccc	432
Tyr Pro Gln Ile Val Asn Glu Arg Ser Thr Gly Glu Met Val Cys Pro	
130 135 140	
aat att aat gca ttt att gct agt aac gta aac gca gat att ata tgg	480
Asn Ile Asn Ala Phe Ile Ala Ser Asn Val Asn Ala Asp Ile Ile Trp	
145 150 155 160	
agc gga cat cga cgc ctt aga aat aag aga ctt aaa caa cgg aca cct	528
Ser Gly His Arg Arg Leu Arg Asn Lys Arg Leu Lys Gln Arg Thr Pro	
165 170 175	
gga att att acc ata gaa gat gtt aga aaa aat gat gct ggt tat tat	576
Gly Ile Ile Thr Ile Glu Asp Val Arg Lys Asn Asp Ala Gly Tyr Tyr	
180 185 190	
aca tgt gtt tta gaa tat ata tac ggt ggc aaa aca tat aac gta acc	624
Thr Cys Val Leu Glu Tyr Ile Tyr Gly Gly Lys Thr Tyr Asn Val Thr	
195 200 205	
aga att gta aaa tta gag gta cgg gat aaa ata ata cct tct act atg	672
Arg Ile Val Lys Leu Glu Val Arg Asp Lys Ile Ile Pro Ser Thr Met	
210 215 220	
caa tta cca gat ggc att gta act tca ata ggt agt aat ttg act att	720
Gln Leu Pro Asp Gly Ile Val Thr Ser Ile Gly Ser Asn Leu Thr Ile	
225 230 235 240	
gcg tgt aga gta tcg ttg aga cct ccc aca acg gac acc gac gtc ttt	768
Ala Cys Arg Val Ser Leu Arg Pro Pro Thr Thr Asp Thr Asp Val Phe	
245 250 255	
tgg ata agt aat ggt atg tat tac gaa gaa gat gat ggg gac gga aac	816
Trp Ile Ser Asn Gly Met Tyr Tyr Glu Glu Asp Asp Gly Asp Gly Asn	

260	265	270	
ggt aga ata agt gta gca aat aaa atc tat atg acc gat aag aga cgt	864		
Gly Arg Ile Ser Val Ala Asn Lys Ile Tyr Met Thr Asp Lys Arg Arg			
275	280	285	
ggt att aca tcc cgg tta aac att aat cct gtt aag gaa gaa gat gct	912		
Val Ile Thr Ser Arg Leu Asn Ile Asn Pro Val Lys Glu Glu Asp Ala			
290	295	300	
aca acg ttt acg tgt atg gcg ttt act att cct agc atc agt aaa aca	960		
Thr Thr Phe Thr Cys Met Ala Phe Thr Ile Pro Ser Ile Ser Lys Thr			
305	310	315	320
ggt act gtt agt ata acg tga	981		
Val Thr Val Ser Ile Thr *			
325			

<210> 416
 <211> 326
 <212> PRT
 <213> vaccinia virus

<400> 416

Met Ser Ile Leu Pro Ile Ile Phe Leu Ser Ile Phe Phe Tyr Ser Ser	
1 5 10 15	
Phe Val Gln Thr Phe Asn Ala Ser Glu Cys Ile Asp Lys Gly Gln Tyr	
20 25 30	
Phe Ala Ser Phe Met Glu Leu Glu Asn Glu Pro Val Ile Leu Pro Cys	
35 40 45	
Pro Gln Ile Asn Thr Leu Ser Ser Gly Tyr Asn Ile Leu Asp Ile Leu	
50 55 60	
Trp Glu Lys Arg Gly Ala Asp Asn Asp Arg Ile Ile Pro Ile Asp Asn	
65 70 75 80	
Gly Ser Asn Met Leu Ile Leu Asn Pro Thr Gln Ser Asp Ser Gly Ile	
85 90 95	
Tyr Ile Cys Ile Thr Thr Asn Glu Thr Tyr Cys Asp Met Met Ser Leu	
100 105 110	
Asn Leu Thr Ile Val Ser Val Ser Glu Ser Asn Ile Asp Leu Ile Ser	
115 120 125	
Tyr Pro Gln Ile Val Asn Glu Arg Ser Thr Gly Glu Met Val Cys Pro	
130 135 140	
Asn Ile Asn Ala Phe Ile Ala Ser Asn Val Asn Ala Asp Ile Ile Trp	
145 150 155 160	
Ser Gly His Arg Arg Leu Arg Asn Lys Arg Leu Lys Gln Arg Thr Pro	
165 170 175	
Gly Ile Ile Thr Ile Glu Asp Val Arg Lys Asn Asp Ala Gly Tyr Tyr	
180 185 190	
Thr Cys Val Leu Glu Tyr Ile Tyr Gly Gly Lys Thr Tyr Asn Val Thr	
195 200 205	
Arg Ile Val Lys Leu Glu Val Arg Asp Lys Ile Ile Pro Ser Thr Met	
210 215 220	
Gln Leu Pro Asp Gly Ile Val Thr Ser Ile Gly Ser Asn Leu Thr Ile	
225 230 235 240	
Ala Cys Arg Val Ser Leu Arg Pro Pro Thr Thr Asp Thr Asp Val Phe	
245 250 255	
Trp Ile Ser Asn Gly Met Tyr Tyr Glu Asp Asp Gly Asp Gly Asn	
260 265 270	

Gly Arg Ile Ser Val Ala Asn Lys Ile Tyr Met Thr Asp Lys Arg Arg
 275 280 285
 Val Ile Thr Ser Arg Leu Asn Ile Asn Pro Val Lys Glu Glu Asp Ala
 290 295 300
 Thr Thr Phe Thr Cys Met Ala Phe Thr Ile Pro Ser Ile Ser Lys Thr
 305 310 315 320
 Val Thr Val Ser Ile Thr
 325

<210> 417
 <211> 1020
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1020)

<400> 417
 atg tct aga aag ttt atg cag gtg tat gaa tat gac aga gag caa tat 48
 Met Ser Arg Lys Phe Met Gln Val Tyr Glu Tyr Asp Arg Glu Gln Tyr
 1 5 10 15
 ctc gat gag ttc atc gaa gac aga tat aac gat agt ttt atc act agt 96
 Leu Asp Glu Phe Ile Glu Asp Arg Tyr Asn Asp Ser Phe Ile Thr Ser
 20 25 30
 cca gaa tac tat agt gcg gaa aaa tac atg tgt aga tat act aca cta 144
 Pro Glu Tyr Tyr Ser Ala Glu Lys Tyr Met Cys Arg Tyr Thr Thr Leu
 35 40 45
 aat cac aat tgt ata aac gta cga cga tgc gcg tta gac tcc aag tta 192
 Asn His Asn Cys Ile Asn Val Arg Arg Cys Ala Leu Asp Ser Lys Leu
 50 55 60
 tta cat gat atc ata acc aat tgt aaa ata tat aac aat ata gaa tta 240
 Leu His Asp Ile Ile Thr Asn Cys Lys Ile Tyr Asn Asn Ile Glu Leu
 65 70 75 80
 gtt agg gcg aca aaa ttt gtt tat tat ctg gat ctg ata aaa tgt aat 288
 Val Arg Ala Thr Lys Phe Val Tyr Tyr Leu Asp Leu Ile Lys Cys Asn
 85 90 95
 tgg gta tct aag gta ggt gat tca gtt cta tat ccc gtt ata ttt ata 336
 Trp Val Ser Lys Val Gly Asp Ser Val Leu Tyr Pro Val Ile Phe Ile
 100 105 110
 aca cat aca agc act aga aat tta gat aaa gtc tct gta aaa aca tac 384
 Thr His Thr Ser Thr Arg Asn Leu Asp Lys Val Ser Val Lys Thr Tyr
 115 120 125
 aag ggc gtt aaa gta aaa aaa ctt aat aga tgc gcg gat cat gct att 432
 Lys Gly Val Lys Val Lys Lys Leu Asn Arg Cys Ala Asp His Ala Ile
 130 135 140
 gta att aat cca ttc gtc aag ttt aaa cta acg ttg ccg aac aaa aca 480
 Val Ile Asn Pro Phe Val Lys Phe Lys Leu Thr Leu Pro Asn Lys Thr
 145 150 155 160

agt cat gca aag gta ttg gtt aca ttt tgt aag tta aga acg gat ata	528
Ser His Ala Lys Val Leu Val Thr Phe Cys Lys Leu Arg Thr Asp Ile	
165 170 175	
acg cag ata gag gca ccg ctt ccg ggc aat gtt tta gtt tat aca ttt	576
Thr Gln Ile Glu Ala Pro Leu Pro Gly Asn Val Leu Val Tyr Thr Phe	
180 185 190	
ccc gat att aat aaa cga att cct gga tat ata cat gtc aac ata gaa	624
Pro Asp Ile Asn Lys Arg Ile Pro Gly Tyr Ile His Val Asn Ile Glu	
195 200 205	
gga tgt atc gat gga atg att tat ata aat tct tca aag ttc gcg tgt	672
Gly Cys Ile Asp Gly Met Ile Tyr Ile Asn Ser Ser Lys Phe Ala Cys	
210 215 220	
gtt tta aaa cta cat aga tca atg tat cgc att cca ccc ttt cct ata	720
Val Leu Lys Leu His Arg Ser Met Tyr Arg Ile Pro Pro Phe Pro Ile	
225 230 235 240	
gat atc tgc tct tgt tgt tca caa tat act aac gat gac ata gaa att	768
Asp Ile Cys Ser Cys Cys Ser Gln Tyr Thr Asn Asp Asp Ile Glu Ile	
245 250 255	
ccc att cat gat tta ata aag gat gtg gca att ttt aaa aat aag gag	816
Pro Ile His Asp Leu Ile Lys Asp Val Ala Ile Phe Lys Asn Lys Glu	
260 265 270	
acg gta tat tat cta aaa tta aat aat aaa act ata gct aga ttt acg	864
Thr Val Tyr Tyr Leu Lys Leu Asn Asn Lys Thr Ile Ala Arg Phe Thr	
275 280 285	
tac ttt aat aat ata gat act gca att aca caa gaa cac gag tat gtc	912
Tyr Phe Asn Asn Ile Asp Thr Ala Ile Thr Gln Glu His Glu Tyr Val	
290 295 300	
aaa ata gct cta ggt ata gtc tgc aag tta atg att aat aat atg cat	960
Lys Ile Ala Leu Gly Ile Val Cys Lys Leu Met Ile Asn Asn Met His	
305 310 315 320	
agt atc gtg gga gtt aat cat agc aat acg ttc gtc aat tgc ttg ttg	1008
Ser Ile Val Gly Val Asn His Ser Asn Thr Phe Val Asn Cys Leu Leu	
325 330 335	
gaa gat aat gta	1020
Glu Asp Asn Val	
340	

<210> 418
 <211> 340
 <212> PRT
 <213> vaccinia virus

<400> 418
 Met Ser Arg Lys Phe Met Gln Val Tyr Glu Tyr Asp Arg Glu Gln Tyr
 1 5 10 15
 Leu Asp Glu Phe Ile Glu Asp Arg Tyr Asn Asp Ser Phe Ile Thr Ser

			20					25				30					
Pro	Glu	Tyr	Tyr	Ser	Ala	Glu	Lys	Tyr	Met	Cys	Arg	Tyr	Thr	Thr	Leu		
		35					40					45					
Asn	His	Asn	Cys	Ile	Asn	Val	Arg	Arg	Cys	Ala	Leu	Asp	Ser	Lys	Leu		
	50					55					60						
Leu	His	Asp	Ile	Ile	Thr	Asn	Cys	Lys	Ile	Tyr	Asn	Asn	Ile	Glu	Leu		
65					70					75					80		
Val	Arg	Ala	Thr	Lys	Phe	Val	Tyr	Tyr	Leu	Asp	Leu	Ile	Lys	Cys	Asn		
				85					90					95			
Trp	Val	Ser	Lys	Val	Gly	Asp	Ser	Val	Leu	Tyr	Pro	Val	Ile	Phe	Ile		
			100					105					110				
Thr	His	Thr	Ser	Thr	Arg	Asn	Leu	Asp	Lys	Val	Ser	Val	Lys	Thr	Tyr		
		115					120					125					
Lys	Gly	Val	Lys	Val	Lys	Lys	Leu	Asn	Arg	Cys	Ala	Asp	His	Ala	Ile		
	130				135						140						
Val	Ile	Asn	Pro	Phe	Val	Lys	Phe	Lys	Leu	Thr	Leu	Pro	Asn	Lys	Thr		
145					150					155					160		
Ser	His	Ala	Lys	Val	Leu	Val	Thr	Phe	Cys	Lys	Leu	Arg	Thr	Asp	Ile		
			165						170					175			
Thr	Gln	Ile	Glu	Ala	Pro	Leu	Pro	Gly	Asn	Val	Leu	Val	Tyr	Thr	Phe		
			180					185					190				
Pro	Asp	Ile	Asn	Lys	Arg	Ile	Pro	Gly	Tyr	Ile	His	Val	Asn	Ile	Glu		
	195					200						205					
Gly	Cys	Ile	Asp	Gly	Met	Ile	Tyr	Ile	Asn	Ser	Ser	Lys	Phe	Ala	Cys		
	210					215					220						
Val	Leu	Lys	Leu	His	Arg	Ser	Met	Tyr	Arg	Ile	Pro	Pro	Phe	Pro	Ile		
225					230					235					240		
Asp	Ile	Cys	Ser	Cys	Cys	Ser	Gln	Tyr	Thr	Asn	Asp	Asp	Ile	Glu	Ile		
				245					250					255			
Pro	Ile	His	Asp	Leu	Ile	Lys	Asp	Val	Ala	Ile	Phe	Lys	Asn	Lys	Glu		
		260						265					270				
Thr	Val	Tyr	Tyr	Leu	Lys	Leu	Asn	Asn	Lys	Thr	Ile	Ala	Arg	Phe	Thr		
	275						280					285					
Tyr	Phe	Asn	Asn	Ile	Asp	Thr	Ala	Ile	Thr	Gln	Glu	His	Glu	Tyr	Val		
	290				295						300						
Lys	Ile	Ala	Leu	Gly	Ile	Val	Cys	Lys	Leu	Met	Ile	Asn	Asn	Met	His		
305					310					315					320		
Ser	Ile	Val	Gly	Val	Asn	His	Ser	Asn	Thr	Phe	Val	Asn	Cys	Leu	Leu		
				325					330					335			
Glu	Asp	Asn	Val														
			340														

<210> 419
 <211> 1725
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1725)

<400> 419																	
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Met	Ser	Arg	Arg	Leu	Ile	Tyr	Val	Leu	Asn	Ile	Asn	Arg	Glu	Ser	Thr		
1				5					10					15			
cat	aaa	ata	caa	gag	aat	gaa	ata	tat	aca	tat	ttt	agt	cat	tgc	aat	96	
His	Lys	Ile	Gln	Glu	Asn	Glu	Ile	Tyr	Thr	Tyr	Phe	Ser	His	Cys	Asn		

20					25					30						
ata	gac	cat	act	tct	aca	gaa	ctt	gat	ttt	gta	gtt	aaa	aac	tat	gat	144
Ile	Asp	His	Thr	Ser	Thr	Glu	Leu	Asp	Phe	Val	Val	Lys	Asn	Tyr	Asp	
		35					40					45				
cta	aac	aga	cga	caa	cct	gta	act	ggg	tat	act	gca	cta	cac	tgc	tat	192
Leu	Asn	Arg	Arg	Gln	Pro	Val	Thr	Gly	Tyr	Thr	Ala	Leu	His	Cys	Tyr	
	50					55					60					
ttg	tat	aat	aat	tac	ttt	aca	aac	gat	gta	ctg	aag	ata	tta	tta	aat	240
Leu	Tyr	Asn	Asn	Tyr	Phe	Thr	Asn	Asp	Val	Leu	Lys	Ile	Leu	Leu	Asn	
	65				70				75						80	
cat	gga	gtg	gat	gta	acg	atg	aaa	acc	agt	agc	gga	cgt	atg	cct	gtt	288
His	Gly	Val	Asp	Val	Thr	Met	Lys	Thr	Ser	Ser	Gly	Arg	Met	Pro	Val	
				85					90					95		
tat	ata	ttg	ctt	act	aga	tgt	tgt	aat	att	tca	cat	gat	gta	gtg	ata	336
Tyr	Ile	Leu	Leu	Thr	Arg	Cys	Cys	Asn	Ile	Ser	His	Asp	Val	Val	Ile	
			100					105					110			
gat	atg	ata	gac	aaa	gat	aaa	aac	cac	tta	tcg	cat	aga	gac	tat	tcc	384
Asp	Met	Ile	Asp	Lys	Asp	Lys	Asn	His	Leu	Ser	His	Arg	Asp	Tyr	Ser	
		115					120					125				
aac	cta	cta	cta	gag	tat	ata	aaa	tct	cgt	tac	atg	tta	ttg	aag	gaa	432
Asn	Leu	Leu	Leu	Glu	Tyr	Ile	Lys	Ser	Arg	Tyr	Met	Leu	Leu	Lys	Glu	
	130					135					140					
gag	gat	atc	gat	gag	aac	ata	gta	tca	act	tta	tta	gat	aag	gga	atc	480
Glu	Asp	Ile	Asp	Glu	Asn	Ile	Val	Ser	Thr	Leu	Leu	Asp	Lys	Gly	Ile	
	145				150					155					160	
gat	cct	aac	ttt	aaa	caa	gac	gga	tat	aca	gcg	tta	cat	tat	tat	tat	528
Asp	Pro	Asn	Phe	Lys	Gln	Asp	Gly	Tyr	Thr	Ala	Leu	His	Tyr	Tyr	Tyr	
			165					170						175		
ttg	tgt	ctc	gca	cac	gtt	tat	aaa	cca	ggt	gag	tgt	aga	aaa	ccg	ata	576
Leu	Cys	Leu	Ala	His	Val	Tyr	Lys	Pro	Gly	Glu	Cys	Arg	Lys	Pro	Ile	
			180					185					190			
acg	ata	aaa	aag	gcc	aag	cga	att	att	tct	ttg	ttt	ata	caa	cat	gga	624
Thr	Ile	Lys	Lys	Ala	Lys	Arg	Ile	Ile	Ser	Leu	Phe	Ile	Gln	His	Gly	
		195					200					205				
gct	aat	cta	aac	gcg	tta	gat	aat	tgt	ggt	aat	aca	cca	ttc	cat	ttg	672
Ala	Asn	Leu	Asn	Ala	Leu	Asp	Asn	Cys	Gly	Asn	Thr	Pro	Phe	His	Leu	
	210					215					220					
tat	ctt	agt	att	gaa	atg	tgt	aat	aat	att	cat	atg	act	aaa	atg	ctg	720
Tyr	Leu	Ser	Ile	Glu	Met	Cys	Asn	Asn	Ile	His	Met	Thr	Lys	Met	Leu	
	225				230					235					240	
ttg	act	ttt	aat	ccg	aat	ttc	aaa	ata	tgt	aat	aat	cat	gga	tta	acg	768
Leu	Thr	Phe	Asn	Pro	Asn	Phe	Lys	Ile	Cys	Asn	Asn	His	Gly	Leu	Thr	
				245					250					255		
cct	ata	cta	tgt	tat	ata	act	tcc	gac	tac	ata	caa	cac	gat	att	ctt	816

Pro	Ile	Leu	Cys	Tyr	Ile	Thr	Ser	Asp	Tyr	Ile	Gln	His	Asp	Ile	Leu		
			260					265					270				
gtt	atg	tta	ata	cat	cac	tat	gaa	aca	aat	gtt	gga	gaa	atg	ccg	ata	864	
Val	Met	Leu	Ile	His	His	Tyr	Glu	Thr	Asn	Val	Gly	Glu	Met	Pro	Ile		
		275					280					285					
gat	gag	cgt	cgt	ata	atc	gta	ttc	gag	ttt	atc	aaa	aca	tat	tct	aca	912	
Asp	Glu	Arg	Arg	Ile	Ile	Val	Phe	Glu	Phe	Ile	Lys	Thr	Tyr	Ser	Thr		
	290					295					300						
cgt	ccg	gca	gat	tcg	ata	act	tat	ttg	atg	aat	agg	ttt	aaa	aat	ata	960	
Arg	Pro	Ala	Asp	Ser	Ile	Thr	Tyr	Leu	Met	Asn	Arg	Phe	Lys	Asn	Ile		
305					310					315					320		
aat	att	tat	acc	cgc	tat	gaa	gga	aag	aca	tta	tta	cac	gta	gca	tgt	1008	
Asn	Ile	Tyr	Thr	Arg	Tyr	Glu	Gly	Lys	Thr	Leu	Leu	His	Val	Ala	Cys		
				325				330						335			
gaa	tat	aat	aat	aca	caa	gta	ata	gat	tat	ctt	ata	cgt	atc	aac	gga	1056	
Glu	Tyr	Asn	Asn	Thr	Gln	Val	Ile	Asp	Tyr	Leu	Ile	Arg	Ile	Asn	Gly		
			340					345					350				
gat	ata	aat	gcg	tta	acc	gac	aat	aac	aaa	cac	gct	atc	caa	ctc	att	1104	
Asp	Ile	Asn	Ala	Leu	Thr	Asp	Asn	Asn	Lys	His	Ala	Ile	Gln	Leu	Ile		
		355					360					365					
ata	gat	aac	aaa	gaa	aat	tcc	ccg	tat	acc	atc	gat	tgt	tta	ttg	tat	1152	
Ile	Asp	Asn	Lys	Glu	Asn	Ser	Pro	Tyr	Thr	Ile	Asp	Cys	Leu	Leu	Tyr		
	370					375					380						
ata	ctt	aga	tat	att	gta	gat	aag	aat	gtg	ata	aga	tcg	ttg	gtg	gat	1200	
Ile	Leu	Arg	Tyr	Ile	Val	Asp	Lys	Asn	Val	Ile	Arg	Ser	Leu	Val	Asp		
385					390				395					400			
caa	ctt	cca	tct	cta	cct	atc	ttc	aat	ata	aaa	tca	ttt	gag	aaa	ttc	1248	
Gln	Leu	Pro	Ser	Leu	Pro	Ile	Phe	Asn	Ile	Lys	Ser	Phe	Glu	Lys	Phe		
				405					410					415			
ata	tcc	tac	tgt	ata	ctt	tta	gat	gac	aca	ttt	tac	aat	agg	cac	gtt	1296	
Ile	Ser	Tyr	Cys	Ile	Leu	Leu	Asp	Asp	Thr	Phe	Tyr	Asn	Arg	His	Val		
			420					425					430				
agg	aat	cgc	aat	tct	aaa	acg	tat	cga	tac	gca	ttt	tca	aaa	tac	atg	1344	
Arg	Asn	Arg	Asn	Ser	Lys	Thr	Tyr	Arg	Tyr	Ala	Phe	Ser	Lys	Tyr	Met		
		435					440					445					
tcg	ttt	gat	aaa	tac	gat	ggt	ata	ata	act	aaa	tgt	cat	aaa	gaa	aca	1392	
Ser	Phe	Asp	Lys	Tyr	Asp	Gly	Ile	Ile	Thr	Lys	Cys	His	Lys	Glu	Thr		
	450					455					460						
ata	ttg	ctc	aaa	cta	tcc	act	gtt	cta	gac	act	aca	cta	tat	gca	gtt	1440	
Ile	Leu	Leu	Lys	Leu	Ser	Thr	Val	Leu	Asp	Thr	Thr	Leu	Tyr	Ala	Val		
465					470				475					480			
tta	aga	tgc	cat	aat	tcg	aaa	aag	tta	aga	aga	tac	ctc	aac	gag	tta	1488	
Leu	Arg	Cys	His	Asn	Ser	Lys	Lys	Leu	Arg	Arg	Tyr	Leu	Asn	Glu	Leu		
				485				490						495			

aaa	aaa	tat	aat	aac	gat	aag	tcc	ttt	aaa	ata	tat	tct	aat	att	atg	1536
Lys	Lys	Tyr	Asn	Asn	Asp	Lys	Ser	Phe	Lys	Ile	Tyr	Ser	Asn	Ile	Met	
			500					505					510			
aat	gag	aga	tac	ctt	aat	gta	tat	tat	aaa	gat	atg	tac	gtg	tca	aag	1584
Asn	Glu	Arg	Tyr	Leu	Asn	Val	Tyr	Tyr	Lys	Asp	Met	Tyr	Val	Ser	Lys	
		515					520					525				
gta	tat	gat	aaa	cta	ttt	cct	gtt	ttc	aca	gat	aaa	aat	tgt	cta	cta	1632
Val	Tyr	Asp	Lys	Leu	Phe	Pro	Val	Phe	Thr	Asp	Lys	Asn	Cys	Leu	Leu	
	530					535					540					
aca	tta	cta	cct	tca	gaa	att	ata	tac	gaa	ata	tta	tac	atg	ctg	aca	1680
Thr	Leu	Leu	Pro	Ser	Glu	Ile	Ile	Tyr	Glu	Ile	Leu	Tyr	Met	Leu	Thr	
545					550				555						560	
att	aac	gat	ctt	tat	aat	ata	tcg	tat	cca	cct	acc	aaa	gta	tag		1725
Ile	Asn	Asp	Leu	Tyr	Asn	Ile	Ser	Tyr	Pro	Pro	Thr	Lys	Val	*		
			565					570								

<210> 420
 <211> 574
 <212> PRT
 <213> vaccinia virus

<400> 420

Met	Ser	Arg	Arg	Leu	Ile	Tyr	Val	Leu	Asn	Ile	Asn	Arg	Glu	Ser	Thr	
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		20					25					30				
Ile	Asp	His	Thr	Ser	Thr	Glu	Leu	Asp	Phe	Val	Val	Lys	Asn	Tyr	Asp	
	35					40						45				
Leu	Asn	Arg	Arg	Gln	Pro	Val	Thr	Gly	Tyr	Thr	Ala	Leu	His	Cys	Tyr	
	50				55						60					
Leu	Tyr	Asn	Asn	Tyr	Phe	Thr	Asn	Asp	Val	Leu	Lys	Ile	Leu	Leu	Asn	
65				70					75						80	
His	Gly	Val	Asp	Val	Thr	Met	Lys	Thr	Ser	Ser	Gly	Arg	Met	Pro	Val	
			85					90					95			
Tyr	Ile	Leu	Leu	Thr	Arg	Cys	Cys	Asn	Ile	Ser	His	Asp	Val	Val	Ile	
		100						105					110			
Asp	Met	Ile	Asp	Lys	Asp	Lys	Asn	His	Leu	Ser	His	Arg	Asp	Tyr	Ser	
	115						120					125				
Asn	Leu	Leu	Leu	Glu	Tyr	Ile	Lys	Ser	Arg	Tyr	Met	Leu	Leu	Lys	Glu	
	130					135				140						
Glu	Asp	Ile	Asp	Glu	Asn	Ile	Val	Ser	Thr	Leu	Leu	Asp	Lys	Gly	Ile	
145				150						155					160	
Asp	Pro	Asn	Phe	Lys	Gln	Asp	Gly	Tyr	Thr	Ala	Leu	His	Tyr	Tyr	Tyr	
			165					170						175		
Leu	Cys	Leu	Ala	His	Val	Tyr	Lys	Pro	Gly	Glu	Cys	Arg	Lys	Pro	Ile	
	180						185						190			
Thr	Ile	Lys	Lys	Ala	Lys	Arg	Ile	Ile	Ser	Leu	Phe	Ile	Gln	His	Gly	
	195						200					205				
Ala	Asn	Leu	Asn	Ala	Leu	Asp	Asn	Cys	Gly	Asn	Thr	Pro	Phe	His	Leu	
	210					215					220					
Tyr	Leu	Ser	Ile	Glu	Met	Cys	Asn	Asn	Ile	His	Met	Thr	Lys	Met	Leu	
225				230						235					240	
Leu	Thr	Phe	Asn	Pro	Asn	Phe	Lys	Ile	Cys	Asn	Asn	His	Gly	Leu	Thr	

Pro	Ile	Leu	Cys	245	Tyr	Ile	Thr	Ser	Asp	250	Tyr	Ile	Gln	His	Asp	255	Ile	Leu
Val	Met	Leu	Ile	260	His	His	Tyr	Glu	Thr	265	Asn	Val	Gly	Glu	Met	270	Pro	Ile
Asp	Glu	Arg	Arg	275	Ile	Ile	Val	Phe	Glu	280	Phe	Ile	Lys	Thr	Tyr	285	Ser	Thr
Arg	Pro	Ala	Asp	290	Ser	Ile	Thr	Tyr	Leu	295	Met	Asn	Arg	Phe	Lys	300	Asn	Ile
Asn	Ile	Tyr	Thr	305	Arg	Tyr	Glu	Gly	Lys	310	Thr	Leu	Leu	His	Val	315	Ala	Cys
Glu	Tyr	Asn	Asn	325	Thr	Gln	Val	Ile	Asp	330	Tyr	Leu	Ile	Arg	Ile	335	Asn	Gly
Asp	Ile	Asn	Ala	340	Leu	Thr	Asp	Asn	Asn	345	Lys	His	Ala	Ile	Gln	350	Leu	Ile
Ile	Asp	Asn	Lys	355	Glu	Asn	Ser	Pro	Tyr	360	Thr	Ile	Asp	Cys	Leu	365	Leu	Tyr
Ile	Leu	Arg	Tyr	370	Ile	Val	Asp	Lys	Asn	375	Val	Ile	Arg	Ser	Leu	380	Val	Asp
Gln	Leu	Pro	Ser	385	Leu	Pro	Ile	Phe	Asn	390	Ile	Lys	Ser	Phe	Glu	395	Lys	Phe
Ile	Ser	Tyr	Cys	405	Ile	Leu	Leu	Asp	Asp	410	Thr	Phe	Tyr	Asn	Arg	415	His	Val
Arg	Asn	Arg	Asn	420	Ser	Lys	Thr	Tyr	Arg	425	Tyr	Ala	Phe	Ser	Lys	430	Tyr	Met
Ser	Phe	Asp	Lys	435	Tyr	Asp	Gly	Ile	Ile	440	Thr	Lys	Cys	His	Lys	445	Glu	Thr
Ile	Leu	Leu	Lys	450	Leu	Ser	Thr	Val	Leu	455	Asp	Thr	Thr	Leu	Tyr	460	Ala	Val
Leu	Arg	Cys	His	465	Asn	Ser	Lys	Lys	Leu	470	Arg	Arg	Tyr	Leu	Asn	475	Glu	Leu
Lys	Lys	Tyr	Asn	485	Asp	Lys	Ser	Phe	Lys	490	Ile	Tyr	Ser	Asn	Ile	495	Met	
Asn	Glu	Arg	Tyr	500	Leu	Asn	Val	Tyr	Tyr	505	Lys	Asp	Met	Tyr	Val	510	Ser	Lys
Val	Tyr	Asp	Lys	515	Leu	Phe	Pro	Val	Phe	520	Thr	Asp	Lys	Asn	Cys	525	Leu	Leu
Thr	Leu	Leu	Pro	530	Ser	Glu	Ile	Ile	Tyr	535	Glu	Ile	Leu	Tyr	Met	540	Leu	Thr
Ile	Asn	Asp	Leu	545	Tyr	Asn	Ile	Ser	Tyr	550	Pro	Pro	Thr	Lys	Val	555		560
				565						570								

<210> 421
 <211> 798
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(798)

<400> 421																	
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Met	Thr	Met	Lys	Met	Met	Val	His	Ile	Tyr	Phe	Val	Ser	Leu	Ser	Leu		
1				5					10					15			
ttg	tta	ttg	cta	ttc	cac	agt	tac	gcc	ata	gac	atc	gaa	aat	gaa	atc	96	
Leu	Leu	Leu	Leu	Phe	His	Ser	Tyr	Ala	Ile	Asp	Ile	Glu	Asn	Glu	Ile		

20					25					30						
aca	gaa	ttc	ttc	aat	aaa	atg	aga	gat	act	cta	cca	gct	aaa	gac	tct	144
Thr	Glu	Phe	Phe	Asn	Lys	Met	Arg	Asp	Thr	Leu	Pro	Ala	Lys	Asp	Ser	
		35					40					45				
aaa	tgg	ttg	aat	cca	gca	tgt	atg	ttc	gga	ggc	aca	atg	aat	gat	atg	192
Lys	Trp	Leu	Asn	Pro	Ala	Cys	Met	Phe	Gly	Gly	Thr	Met	Asn	Asp	Met	
	50					55					60					
gcc	act	cta	gga	gag	cca	ttc	agc	gca	aag	tgt	cct	cct	att	gaa	gac	240
Ala	Thr	Leu	Gly	Glu	Pro	Phe	Ser	Ala	Lys	Cys	Pro	Pro	Ile	Glu	Asp	
65					70					75					80	
agt	ctt	tta	tcg	cac	aga	tat	aaa	gac	tat	gtg	gtt	aaa	tgg	gaa	agg	288
Ser	Leu	Leu	Ser	His	Arg	Tyr	Lys	Asp	Tyr	Val	Val	Lys	Trp	Glu	Arg	
				85					90					95		
cta	gaa	aag	aat	aga	cgg	cga	cag	gtt	tct	aat	aaa	cgt	gtt	aaa	cat	336
Leu	Glu	Lys	Asn	Arg	Arg	Arg	Gln	Val	Ser	Asn	Lys	Arg	Val	Lys	His	
			100					105					110			
ggt	gat	tta	tgg	ata	gcc	aac	tat	aca	tct	aaa	ttc	agt	aac	cgt	agg	384
Gly	Asp	Leu	Trp	Ile	Ala	Asn	Tyr	Thr	Ser	Lys	Phe	Ser	Asn	Arg	Arg	
		115					120					125				
tat	ttg	tgt	acc	gta	act	aca	aag	aat	ggt	gac	tgt	gtt	cag	ggt	ata	432
Tyr	Leu	Cys	Thr	Val	Thr	Thr	Lys	Asn	Gly	Asp	Cys	Val	Gln	Gly	Ile	
	130					135					140					
gtt	aga	tct	cat	att	aga	aaa	cct	cct	tca	tgc	att	cca	aaa	aca	tat	480
Val	Arg	Ser	His	Ile	Arg	Lys	Pro	Pro	Ser	Cys	Ile	Pro	Lys	Thr	Tyr	
145					150					155					160	
gaa	cta	ggt	act	cat	gat	aag	tat	ggc	ata	gac	tta	tac	tgt	gga	att	528
Glu	Leu	Gly	Thr	His	Asp	Lys	Tyr	Gly	Ile	Asp	Leu	Tyr	Cys	Gly	Ile	
				165				170						175		
ctt	tac	gca	aaa	cat	tat	aat	aat	ata	act	tgg	tat	aaa	gat	aat	aag	576
Leu	Tyr	Ala	Lys	His	Tyr	Asn	Asn	Ile	Thr	Trp	Tyr	Lys	Asp	Asn	Lys	
			180					185					190			
gaa	att	aat	atc	gac	gat	att	aag	tat	tca	caa	acg	gga	aag	aaa	tta	624
Glu	Ile	Asn	Ile	Asp	Asp	Ile	Lys	Tyr	Ser	Gln	Thr	Gly	Lys	Lys	Leu	
		195					200					205				
att	att	cat	aat	cca	gag	tta	gaa	gat	agc	gga	aga	tac	gac	tgt	tac	672
Ile	Ile	His	Asn	Pro	Glu	Leu	Glu	Asp	Ser	Gly	Arg	Tyr	Asp	Cys	Tyr	
		210				215					220					
gtt	cat	tac	gac	gac	gtt	aga	atc	aag	aat	gat	atc	gta	gta	tca	aga	720
Val	His	Tyr	Asp	Asp	Val	Arg	Ile	Lys	Asn	Asp	Ile	Val	Val	Ser	Arg	
225					230					235					240	
tgt	aaa	ata	ctt	acg	gtt	ata	ccg	tca	caa	gac	cac	agg	ttt	aaa	cta	768
Cys	Lys	Ile	Leu	Thr	Val	Ile	Pro	Ser	Gln	Asp	His	Arg	Phe	Lys	Leu	
				245					250					255		
aaa	aga	aat	tgc	gga	tat	gcg	tca	aat	taa							798

Lys Arg Asn Cys Gly Tyr Ala Ser Asn *
 260 265

<210> 422
 <211> 265
 <212> PRT
 <213> vaccinia virus

<400> 422
 Met Thr Met Lys Met Met Val His Ile Tyr Phe Val Ser Leu Ser Leu
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 Leu Leu Leu Leu Phe His Ser Tyr Ala Ile Asp Ile Glu Asn Glu Ile
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 Thr Glu Phe Phe Asn Lys Met Arg Asp Thr Leu Pro Ala Lys Asp Ser
 35 40 45
 Lys Trp Leu Asn Pro Ala Cys Met Phe Gly Gly Thr Met Asn Asp Met
 50 55 60
 Ala Thr Leu Gly Glu Pro Phe Ser Ala Lys Cys Pro Pro Ile Glu Asp
 65 70 75 80
 Ser Leu Leu Ser His Arg Tyr Lys Asp Tyr Val Val Lys Trp Glu Arg
 85 90 95
 Leu Glu Lys Asn Arg Arg Arg Gln Val Ser Asn Lys Arg Val Lys His
 100 105 110
 Gly Asp Leu Trp Ile Ala Asn Tyr Thr Ser Lys Phe Ser Asn Arg Arg
 115 120 125
 Tyr Leu Cys Thr Val Thr Thr Lys Asn Gly Asp Cys Val Gln Gly Ile
 130 135 140
 Val Arg Ser His Ile Arg Lys Pro Pro Ser Cys Ile Pro Lys Thr Tyr
 145 150 155 160
 Glu Leu Gly Thr His Asp Lys Tyr Gly Ile Asp Leu Tyr Cys Gly Ile
 165 170 175
 Leu Tyr Ala Lys His Tyr Asn Asn Ile Thr Trp Tyr Lys Asp Asn Lys
 180 185 190
 Glu Ile Asn Ile Asp Asp Ile Lys Tyr Ser Gln Thr Gly Lys Lys Leu
 195 200 205
 Ile Ile His Asn Pro Glu Leu Glu Asp Ser Gly Arg Tyr Asp Cys Tyr
 210 215 220
 Val His Tyr Asp Asp Val Arg Ile Lys Asn Asp Ile Val Val Ser Arg
 225 230 235 240
 Cys Lys Ile Leu Thr Val Ile Pro Ser Gln Asp His Arg Phe Lys Leu
 245 250 255
 Lys Arg Asn Cys Gly Tyr Ala Ser Asn
 260 265

<210> 423
 <211> 276
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(276)

<400> 423
 atg cgt caa att aaa ata aat ggt acg gac atg ctt aca gtg atg tac 48
 Met Arg Gln Ile Lys Ile Asn Gly Thr Asp Met Leu Thr Val Met Tyr
 1 5 10 15

atg tta aat aaa cct aca aag aaa cga tat gtt aat aat ccg ata ttt 96
 Met Leu Asn Lys Pro Thr Lys Lys Arg Tyr Val Asn Asn Pro Ile Phe
 20 25 30

 aca gat tgg gct aat aag caa tat aag ttt tat aat caa ata ata tat 144
 Thr Asp Trp Ala Asn Lys Gln Tyr Lys Phe Tyr Asn Gln Ile Ile Tyr
 35 40 45

 aat gct aat aag tta ata gaa caa agt aag aaa ata gac gac atg ata 192
 Asn Ala Asn Lys Leu Ile Glu Gln Ser Lys Lys Ile Asp Asp Met Ile
 50 55 60

 gag gag gta tcc att gac gat aat cgt tta tca aca cta ccg tta gaa 240
 Glu Glu Val Ser Ile Asp Asp Asn Arg Leu Ser Thr Leu Pro Leu Glu
 65 70 75 80

 att aga cat ttg att ttc tcg tac gcg ttc cta taa 276
 Ile Arg His Leu Ile Phe Ser Tyr Ala Phe Leu *
 85 90

<210> 424
 <211> 91
 <212> PRT
 <213> vaccinia virus

<400> 424
 Met Arg Gln Ile Lys Ile Asn Gly Thr Asp Met Leu Thr Val Met Tyr
 1 5 10 15
 Met Leu Asn Lys Pro Thr Lys Lys Arg Tyr Val Asn Asn Pro Ile Phe
 20 25 30
 Thr Asp Trp Ala Asn Lys Gln Tyr Lys Phe Tyr Asn Gln Ile Ile Tyr
 35 40 45
 Asn Ala Asn Lys Leu Ile Glu Gln Ser Lys Lys Ile Asp Asp Met Ile
 50 55 60
 Glu Glu Val Ser Ile Asp Asp Asn Arg Leu Ser Thr Leu Pro Leu Glu
 65 70 75 80
 Ile Arg His Leu Ile Phe Ser Tyr Ala Phe Leu
 85 90

<210> 425
 <211> 168
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(168)

<400> 425
 atg tct tct aaa ggg ggt agt ggc ggc atg tgg agt gtc ttt atc cat 48
 Met Ser Ser Lys Gly Gly Ser Gly Gly Met Trp Ser Val Phe Ile His
 1 5 10 15

 gga cat gat ggt agt aat aaa gga tct aaa act tat aca tct ggt ggc 96
 Gly His Asp Gly Ser Asn Lys Gly Ser Lys Thr Tyr Thr Ser Gly Gly
 20 25 30

ggt gga atg tgg gga gga gga tcg tcc agt ggg gtt aac gga ggt gta 144
 Gly Gly Met Trp Gly Gly Gly Ser Ser Ser Gly Val Asn Gly Gly Val
 35 40 45

aaa tct gga act ggt aaa att taa 168
 Lys Ser Gly Thr Gly Lys Ile *
 50 55

<210> 426
 <211> 55
 <212> PRT
 <213> vaccinia virus

<400> 426
 Met Ser Ser Lys Gly Gly Ser Gly Gly Met Trp Ser Val Phe Ile His
 1 5 10 15
 Gly His Asp Gly Ser Asn Lys Gly Ser Lys Thr Tyr Thr Ser Gly Gly
 20 25 30
 Gly Gly Met Trp Gly Gly Gly Ser Ser Ser Gly Val Asn Gly Gly Val
 35 40 45
 Lys Ser Gly Thr Gly Lys Ile
 50 55

<210> 427
 <211> 216
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(216)

<400> 427
 atg ttt gac tat ttg gaa aat gag gag gtg gct ctc gat gaa ctt aaa 48
 Met Phe Asp Tyr Leu Glu Asn Glu Glu Val Ala Leu Asp Glu Leu Lys
 1 5 10 15

cag atg ttg aga gac aga gat cct aat gat acc agg aac caa ttc aag 96
 Gln Met Leu Arg Asp Arg Asp Pro Asn Asp Thr Arg Asn Gln Phe Lys
 20 25 30

aat aat gct tta cac gca tac ctt ttt aat gag cat tgt aat aat gtc 144
 Asn Asn Ala Leu His Ala Tyr Leu Phe Asn Glu His Cys Asn Asn Val
 35 40 45

gag gtc gtc aaa cta cta cta gac agt ggc act aat cca tta cgc aaa 192
 Glu Val Val Lys Leu Leu Leu Asp Ser Gly Thr Asn Pro Leu Arg Lys
 50 55 60

aat tgg aga cag cta ccc cat tag 216
 Asn Trp Arg Gln Leu Pro His *
 65 70

<210> 428
 <211> 71

<212> PRT
 <213> vaccinia virus

<400> 428

```
Met Phe Asp Tyr Leu Glu Asn Glu Glu Val Ala Leu Asp Glu Leu Lys
 1           5           10           15
Gln Met Leu Arg Asp Arg Asp Pro Asn Asp Thr Arg Asn Gln Phe Lys
          20           25           30
Asn Asn Ala Leu His Ala Tyr Leu Phe Asn Glu His Cys Asn Asn Val
          35           40           45
Glu Val Val Lys Leu Leu Leu Asp Ser Gly Thr Asn Pro Leu Arg Lys
          50           55           60
Asn Trp Arg Gln Leu Pro His
65           70
```

<210> 429
 <211> 234
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(234)

<400> 429

```
atg tta aag tta aag gat ata gcg atg gct cta cta gaa gcc act gga      48
Met Leu Lys Leu Lys Asp Ile Ala Met Ala Leu Leu Glu Ala Thr Gly
 1           5           10           15

ttt agc aac ata aat gac ttt aat ata ttc agc tat atg aaa tcc aaa      96
Phe Ser Asn Ile Asn Asp Phe Asn Ile Phe Ser Tyr Met Lys Ser Lys
          20           25           30

aat gta gac gtt gac ttg ata aag gtg ttg gta gaa cat gga ttt gac      144
Asn Val Asp Val Asp Leu Ile Lys Val Leu Val Glu His Gly Phe Asp
          35           40           45

ttg agt gtt aaa tgt gaa aac cat cgt tca gtt ata gaa aat tat gta      192
Leu Ser Val Lys Cys Glu Asn His Arg Ser Val Ile Glu Asn Tyr Val
          50           55           60

atg aca atg atc ctg ttc cta aaa tta ttg att tgt tca tag              234
Met Thr Met Ile Leu Phe Leu Lys Leu Leu Ile Cys Ser *
 65           70           75
```

<210> 430
 <211> 77
 <212> PRT
 <213> vaccinia virus

<400> 430

```
Met Leu Lys Leu Lys Asp Ile Ala Met Ala Leu Leu Glu Ala Thr Gly
 1           5           10           15
Phe Ser Asn Ile Asn Asp Phe Asn Ile Phe Ser Tyr Met Lys Ser Lys
          20           25           30
Asn Val Asp Val Asp Leu Ile Lys Val Leu Val Glu His Gly Phe Asp
```

		35					40				45						
Leu	Ser	Val	Lys	Cys	Glu	Asn	His	Arg	Ser	Val	Ile	Glu	Asn	Tyr	Val		
	50					55					60						
Met	Thr	Met	Ile	Leu	Phe	Leu	Lys	Leu	Leu	Ile	Cys	Ser					
65					70					75							

<210> 431
 <211> 408
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(408)

<400> 431

atg	aaa	gga	ata	gat	aac	act	gct	tat	tca	tat	ata	gac	gat	cta	aca		48
Met	Lys	Gly	Ile	Asp	Asn	Thr	Ala	Tyr	Ser	Tyr	Ile	Asp	Asp	Leu	Thr		
1				5					10					15			
tgt	tgc	act	cga	gga	att	atg	gct	gat	tat	cta	aat	agt	gat	tat	aga		96
Cys	Cys	Thr	Arg	Gly	Ile	Met	Ala	Asp	Tyr	Leu	Asn	Ser	Asp	Tyr	Arg		
			20					25					30				
tac	aat	aaa	gat	gta	gat	ttg	gtc	aaa	ttg	ttt	ttg	gag	aat	gga	aag		144
Tyr	Asn	Lys	Asp	Val	Asp	Leu	Val	Lys	Leu	Phe	Leu	Glu	Asn	Gly	Lys		
		35					40					45					
cct	cac	gga	ata	atg	tgt	agt	att	gta	cca	cta	tgg	aga	aat	gat	aag		192
Pro	His	Gly	Ile	Met	Cys	Ser	Ile	Val	Pro	Leu	Trp	Arg	Asn	Asp	Lys		
	50				55					60							
gaa	acc	atc	ttt	ttg	ata	ttg	aaa	aca	atg	aac	tcg	gat	gtc	ctc	caa		240
Glu	Thr	Ile	Phe	Leu	Ile	Leu	Lys	Thr	Met	Asn	Ser	Asp	Val	Leu	Gln		
65				70					75					80			
cat	ata	cta	att	gag	tat	atg	aca	ttc	ggc	gat	atc	cct	cta	gtg	gaa		288
His	Ile	Leu	Ile	Glu	Tyr	Met	Thr	Phe	Gly	Asp	Ile	Pro	Leu	Val	Glu		
			85					90						95			
tat	gga	act	gtg	gta	aat	aaa	gag	gct	ata	cac	gga	tac	ttt	aga	aat		336
Tyr	Gly	Thr	Val	Val	Asn	Lys	Glu	Ala	Ile	His	Gly	Tyr	Phe	Arg	Asn		
			100					105					110				
att	aat	att	gat	tct	tac	acg	atg	aaa	tat	cta	cta	aaa	aag	gaa	ggg		384
Ile	Asn	Ile	Asp	Ser	Tyr	Thr	Met	Lys	Tyr	Leu	Leu	Lys	Lys	Glu	Gly		
		115					120					125					
aga	tgc	cat	caa	tta	tct	cga	tga										408
Arg	Cys	His	Gln	Leu	Ser	Arg	*										
	130					135											

<210> 432
 <211> 135
 <212> PRT
 <213> vaccinia virus

<400> 432
Met Lys Gly Ile Asp Asn Thr Ala Tyr Ser Tyr Ile Asp Asp Leu Thr
1 5 10 15
Cys Cys Thr Arg Gly Ile Met Ala Asp Tyr Leu Asn Ser Asp Tyr Arg
20 25 30
Tyr Asn Lys Asp Val Asp Leu Val Lys Leu Phe Leu Glu Asn Gly Lys
35 40 45
Pro His Gly Ile Met Cys Ser Ile Val Pro Leu Trp Arg Asn Asp Lys
50 55 60
Glu Thr Ile Phe Leu Ile Leu Lys Thr Met Asn Ser Asp Val Leu Gln
65 70 75 80
His Ile Leu Ile Glu Tyr Met Thr Phe Gly Asp Ile Pro Leu Val Glu
85 90 95
Tyr Gly Thr Val Val Asn Lys Glu Ala Ile His Gly Tyr Phe Arg Asn
100 105 110
Ile Asn Ile Asp Ser Tyr Thr Met Lys Tyr Leu Leu Lys Lys Glu Gly
115 120 125
Arg Cys His Gln Leu Ser Arg
130 135

<210> 433
<211> 429
<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(429)

<400> 433
atg tct tat gct tgc cca att ctt agt act ata aac att tgc cta cct 48
Met Ser Tyr Ala Cys Pro Ile Leu Ser Thr Ile Asn Ile Cys Leu Pro
1 5 10 15
tat ctt aaa gac att aac atg att gac aaa cga gga gaa aca ctt ctt 96
Tyr Leu Lys Asp Ile Asn Met Ile Asp Lys Arg Gly Glu Thr Leu Leu
20 25 30
cac aag gct gtt aga tat aat aaa caa tct cta gta tct tta ctg cta 144
His Lys Ala Val Arg Tyr Asn Lys Gln Ser Leu Val Ser Leu Leu Leu
35 40 45
gaa tcc ggt tca gat gtc aac att aga tca aat aac gga tat aca tgt 192
Glu Ser Gly Ser Asp Val Asn Ile Arg Ser Asn Asn Gly Tyr Thr Cys
50 55 60
ata gcc att gcc atc aac gaa tct aaa aac att gaa ctg ctg aaa atg 240
Ile Ala Ile Ala Ile Asn Glu Ser Lys Asn Ile Glu Leu Leu Lys Met
65 70 75 80
cta tta tgt cat aaa cct aca tta gat tat gtg att gat tca ttg aga 288
Leu Leu Cys His Lys Pro Thr Leu Asp Tyr Val Ile Asp Ser Leu Arg
85 90 95
gaa ata tct aac atc gta gat aac tac tat gct ata aaa caa tgt att 336
Glu Ile Ser Asn Ile Val Asp Asn Tyr Tyr Ala Ile Lys Gln Cys Ile
100 105 110

aaa	tat	gcc	atg	att	ata	gat	gac	tgt	aca	tcg	tct	aag	att	cca	gag	384
Lys	Tyr	Ala	Met	Ile	Ile	Asp	Asp	Cys	Thr	Ser	Ser	Lys	Ile	Pro	Glu	
		115					120					125				

tcc	ata	agt	caa	cgc	tat	aat	gat	tat	ata	gat	ctt	tgc	aat	taa		429
Ser	Ile	Ser	Gln	Arg	Tyr	Asn	Asp	Tyr	Ile	Asp	Leu	Cys	Asn	*		
		130				135					140					

<210> 434
 <211> 142
 <212> PRT
 <213> vaccinia virus

<400> 434

Met	Ser	Tyr	Ala	Cys	Pro	Ile	Leu	Ser	Thr	Ile	Asn	Ile	Cys	Leu	Pro	
1				5					10					15		
Tyr	Leu	Lys	Asp	Ile	Asn	Met	Ile	Asp	Lys	Arg	Gly	Glu	Thr	Leu	Leu	
		20						25					30			
His	Lys	Ala	Val	Arg	Tyr	Asn	Lys	Gln	Ser	Leu	Val	Ser	Leu	Leu	Leu	
		35				40						45				
Glu	Ser	Gly	Ser	Asp	Val	Asn	Ile	Arg	Ser	Asn	Asn	Gly	Tyr	Thr	Cys	
	50					55					60					
Ile	Ala	Ile	Ala	Ile	Asn	Glu	Ser	Lys	Asn	Ile	Glu	Leu	Leu	Lys	Met	
65					70					75					80	
Leu	Leu	Cys	His	Lys	Pro	Thr	Leu	Asp	Tyr	Val	Ile	Asp	Ser	Leu	Arg	
			85					90						95		
Glu	Ile	Ser	Asn	Ile	Val	Asp	Asn	Tyr	Tyr	Ala	Ile	Lys	Gln	Cys	Ile	
			100					105					110			
Lys	Tyr	Ala	Met	Ile	Ile	Asp	Asp	Cys	Thr	Ser	Ser	Lys	Ile	Pro	Glu	
		115				120						125				
Ser	Ile	Ser	Gln	Arg	Tyr	Asn	Asp	Tyr	Ile	Asp	Leu	Cys	Asn			
		130				135					140					

<210> 435
 <211> 273
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(273)

<400> 435

atg	aaa	aaa	ata	atg	gta	ggt	ggt	aat	act	atg	ttc	tca	tta	ata	ttt	48
Met	Lys	Lys	Ile	Met	Val	Gly	Gly	Asn	Thr	Met	Phe	Ser	Leu	Ile	Phe	
1				5					10					15		
act	gat	cat	gga	gct	aaa	att	att	cat	aga	tat	gcc	aat	aat	cca	gaa	96
Thr	Asp	His	Gly	Ala	Lys	Ile	Ile	His	Arg	Tyr	Ala	Asn	Asn	Pro	Glu	
			20					25					30			
tta	cgt	gag	tat	tat	gag	tta	aaa	caa	aat	aaa	ata	tat	gtg	gaa	gca	144
Leu	Arg	Glu	Tyr	Tyr	Glu	Leu	Lys	Gln	Asn	Lys	Ile	Tyr	Val	Glu	Ala	
			35				40					45				
tat	gat	att	att	tcc	aac	gca	ata	gtg	aaa	cat	gat	aga	ata	cat	aaa	192

Tyr Asp Ile Ile Ser Asn Ala Ile Val Lys His Asp Arg Ile His Lys
 50 55 60
 acc ata gaa tca gtt gat gat aat acc tac att tct aat ctt ccg tat 240
 Thr Ile Glu Ser Val Asp Asp Asn Thr Tyr Ile Ser Asn Leu Pro Tyr
 65 70 75 80
 acc atc aaa tac aaa ata ttc gag caa caa taa 273
 Thr Ile Lys Tyr Lys Ile Phe Glu Gln Gln *
 85 90

<210> 436
 <211> 90
 <212> PRT
 <213> vaccinia virus

<400> 436
 Met Lys Lys Ile Met Val Gly Gly Asn Thr Met Phe Ser Leu Ile Phe
 1 5 10 15
 Thr Asp His Gly Ala Lys Ile Ile His Arg Tyr Ala Asn Asn Pro Glu
 20 25 30
 Leu Arg Glu Tyr Tyr Glu Leu Lys Gln Asn Lys Ile Tyr Val Glu Ala
 35 40 45
 Tyr Asp Ile Ile Ser Asn Ala Ile Val Lys His Asp Arg Ile His Lys
 50 55 60
 Thr Ile Glu Ser Val Asp Asp Asn Thr Tyr Ile Ser Asn Leu Pro Tyr
 65 70 75 80
 Thr Ile Lys Tyr Lys Ile Phe Glu Gln Gln
 85 90

<210> 437
 <211> 375
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(375)

<400> 437
 atg aga atc cta ttt ctc atc gcc ttc atg tat ggg tgt gtt cac cca 48
 Met Arg Ile Leu Phe Leu Ile Ala Phe Met Tyr Gly Cys Val His Pro
 1 5 10 15
 tat gtt aat gcc gac gaa atc aaa tgt cct aac cta aac atc gta aca 96
 Tyr Val Asn Ala Asp Glu Ile Lys Cys Pro Asn Leu Asn Ile Val Thr
 20 25 30
 tct tct gga gaa ttt cgt tgc act gga tgt gtg aaa ttt atg cct aat 144
 Ser Ser Gly Glu Phe Arg Cys Thr Gly Cys Val Lys Phe Met Pro Asn
 35 40 45
 ttt agc tac atg tat tgg ttg gca aag gat atg aga tcg gac gag gat 192
 Phe Ser Tyr Met Tyr Trp Leu Ala Lys Asp Met Arg Ser Asp Glu Asp
 50 55 60
 acc aag ttt ata gaa cat ctg ggt gat ggc atc aaa gaa gat gaa acc 240

Thr	Lys	Phe	Ile	Glu	His	Leu	Gly	Asp	Gly	Ile	Lys	Glu	Asp	Glu	Thr	
65					70					75					80	
ggt	cgt	acc	ata	gat	ggt	aga	atc	gtc	act	cta	cag	aaa	gtc	ctt	cat	288
Val	Arg	Thr	Ile	Asp	Gly	Arg	Ile	Val	Thr	Leu	Gln	Lys	Val	Leu	His	
				85				90						95		
gta	acc	gat	act	aat	aaa	ttt	gct	cat	tat	agg	ttc	act	tgt	gtc	ctc	336
Val	Thr	Asp	Thr	Asn	Lys	Phe	Ala	His	Tyr	Arg	Phe	Thr	Cys	Val	Leu	
			100					105					110			
act	acg	ata	gat	ggc	att	tat	aaa	aag	aat	ggt	tgc	tga				375
Thr	Thr	Ile	Asp	Gly	Ile	Tyr	Lys	Lys	Asn	Val	Cys	*				
		115					120									

<210> 438
 <211> 124
 <212> PRT
 <213> vaccinia virus

<400> 438																
Met	Arg	Ile	Leu	Phe	Leu	Ile	Ala	Phe	Met	Tyr	Gly	Cys	Val	His	Pro	
1			5					10						15		
Tyr	Val	Asn	Ala	Asp	Glu	Ile	Lys	Cys	Pro	Asn	Leu	Asn	Ile	Val	Thr	
		20						25					30			
Ser	Ser	Gly	Glu	Phe	Arg	Cys	Thr	Gly	Cys	Val	Lys	Phe	Met	Pro	Asn	
		35					40					45				
Phe	Ser	Tyr	Met	Tyr	Trp	Leu	Ala	Lys	Asp	Met	Arg	Ser	Asp	Glu	Asp	
		50				55				60						
Thr	Lys	Phe	Ile	Glu	His	Leu	Gly	Asp	Gly	Ile	Lys	Glu	Asp	Glu	Thr	
65					70				75					80		
Val	Arg	Thr	Ile	Asp	Gly	Arg	Ile	Val	Thr	Leu	Gln	Lys	Val	Leu	His	
				85				90						95		
Val	Thr	Asp	Thr	Asn	Lys	Phe	Ala	His	Tyr	Arg	Phe	Thr	Cys	Val	Leu	
		100						105					110			
Thr	Thr	Ile	Asp	Gly	Ile	Tyr	Lys	Lys	Asn	Val	Cys					
		115					120									

<210> 439
 <211> 186
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(186)

<400> 439																
atg	aag	ttg	ttt	act	caa	aac	gat	aga	tac	ttt	ggt	tta	ttg	gat	tcg	48
Met	Lys	Leu	Phe	Thr	Gln	Asn	Asp	Arg	Tyr	Phe	Gly	Leu	Leu	Asp	Ser	
1			5					10						15		
tgt	aat	cat	ata	ttt	tgc	ata	aca	tgt	atc	aat	ata	tgg	cat	aaa	aca	96
Cys	Asn	His	Ile	Phe	Cys	Ile	Thr	Cys	Ile	Asn	Ile	Trp	His	Lys	Thr	
			20					25					30			
cga	aga	gaa	acc	ggt	gcg	tcg	gat	aat	tgt	cct	ata	tgt	cgt	acc	cgt	144

Arg	Arg	Glu	Thr	Gly	Ala	Ser	Asp	Asn	Cys	Pro	Ile	Cys	Arg	Thr	Arg	
		35					40					45				
ttt	aga	aac	ata	aca	atg	agc	aag	ttc	tat	aag	cta	gtt	aac			186
Phe	Arg	Asn	Ile	Thr	Met	Ser	Lys	Phe	Tyr	Lys	Leu	Val	Asn			
		50				55					60					

<210> 440
 <211> 62
 <212> PRT
 <213> vaccinia virus

Met	Lys	Leu	Phe	Thr	Gln	Asn	Asp	Arg	Tyr	Phe	Gly	Leu	Leu	Asp	Ser	
1				5					10					15		
Cys	Asn	His	Ile	Phe	Cys	Ile	Thr	Cys	Ile	Asn	Ile	Trp	His	Lys	Thr	
			20					25					30			
Arg	Arg	Glu	Thr	Gly	Ala	Ser	Asp	Asn	Cys	Pro	Ile	Cys	Arg	Thr	Arg	
		35					40					45				
Phe	Arg	Asn	Ile	Thr	Met	Ser	Lys	Phe	Tyr	Lys	Leu	Val	Asn			
		50				55					60					

<210> 441
 <211> 249
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(249)

atg	cat	tat	ccg	aaa	tat	tat	atc	aat	atc	aca	aaa	ata	aat	cca	cat	48
Met	His	Tyr	Pro	Lys	Tyr	Tyr	Ile	Asn	Ile	Thr	Lys	Ile	Asn	Pro	His	
1				5					10					15		
ttg	gct	aat	caa	ttt	cgg	gct	tg	aaa	aaa	cgt	atc	gcc	gga	agg	gac	96
Leu	Ala	Asn	Gln	Phe	Arg	Ala	Trp	Lys	Lys	Arg	Ile	Ala	Gly	Arg	Asp	
			20					25					30			
tat	atg	act	aac	tta	tct	aga	gat	aca	gga	ata	caa	caa	tca	aaa	ctt	144
Tyr	Met	Thr	Asn	Leu	Ser	Arg	Asp	Thr	Gly	Ile	Gln	Gln	Ser	Lys	Leu	
		35					40					45				
act	gaa	act	ata	cgt	aac	tgt	caa	aaa	aat	aga	aac	ata	tat	ggt	cta	192
Thr	Glu	Thr	Ile	Arg	Asn	Cys	Gln	Lys	Asn	Arg	Asn	Ile	Tyr	Gly	Leu	
		50				55					60					
tat	ata	cac	tac	aat	tta	gtt	att	aat	tg	ata	acc	gat	gtg	att	atc	240
Tyr	Ile	His	Tyr	Asn	Leu	Val	Ile	Asn	Trp	Ile	Thr	Asp	Val	Ile	Ile	
		65			70					75					80	
aat	caa	tat														249
Asn	Gln	Tyr														

<210> 442
 <211> 83
 <212> PRT
 <213> vaccinia virus

<400> 442
 Met His Tyr Pro Lys Tyr Tyr Ile Asn Ile Thr Lys Ile Asn Pro His
 1 5 10 15
 Leu Ala Asn Gln Phe Arg Ala Trp Lys Lys Arg Ile Ala Gly Arg Asp
 20 25 30
 Tyr Met Thr Asn Leu Ser Arg Asp Thr Gly Ile Gln Gln Ser Lys Leu
 35 40 45
 Thr Glu Thr Ile Arg Asn Cys Gln Lys Asn Arg Asn Ile Tyr Gly Leu
 50 55 60
 Tyr Ile His Tyr Asn Leu Val Ile Asn Trp Ile Thr Asp Val Ile Ile
 65 70 75 80
 Asn Gln Tyr

<210> 443
 <211> 996
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(996)

<400> 443
 atg gat att tac gac gat aaa ggt cta cag act att aaa ctg ttt aat 48
 Met Asp Ile Tyr Asp Asp Lys Gly Leu Gln Thr Ile Lys Leu Phe Asn
 1 5 10 15
 aat gaa ttt gat tgt ata agg aat gac atc aga gaa tta ttt aaa cat 96
 Asn Glu Phe Asp Cys Ile Arg Asn Asp Ile Arg Glu Leu Phe Lys His
 20 25 30
 gta act gat tcc gat agt ata caa ctt ccg atg gaa gac aat tct gat 144
 Val Thr Asp Ser Asp Ser Ile Gln Leu Pro Met Glu Asp Asn Ser Asp
 35 40 45
 att ata gaa aat atc aga aaa ata cta tat aga cga tta aaa aat gta 192
 Ile Ile Glu Asn Ile Arg Lys Ile Leu Tyr Arg Arg Leu Lys Asn Val
 50 55 60
 gaa tgt gtt gac atc gat aac aca ata act ttt atg aaa tac gat cca 240
 Glu Cys Val Asp Ile Asp Asn Thr Ile Thr Phe Met Lys Tyr Asp Pro
 65 70 75 80
 aat gat gat aat aag cgt acg tgt tct aat tgg gta ccc tta act aat 288
 Asn Asp Asp Asn Lys Arg Thr Cys Ser Asn Trp Val Pro Leu Thr Asn
 85 90 95
 aac tat atg gaa tat tgt cta gta ata tat ttg gaa aca ccg ata tgt 336
 Asn Tyr Met Glu Tyr Cys Leu Val Ile Tyr Leu Glu Thr Pro Ile Cys
 100 105 110
 gga ggc aaa ata aaa tta tac cac cct aca gga aat ata aag tcg gat 384

Gly	Gly	Lys	Ile	Lys	Leu	Tyr	His	Pro	Thr	Gly	Asn	Ile	Lys	Ser	Asp	
		115					120					125				
aag	gat	att	atg	ttt	gca	aag	act	cta	gac	ttt	aaa	tca	aag	aaa	gtg	432
Lys	Asp	Ile	Met	Phe	Ala	Lys	Thr	Leu	Asp	Phe	Lys	Ser	Lys	Lys	Val	
		130					135				140					
tta	act	gga	cgt	aag	aca	att	gcc	ggt	cta	gac	ata	tcc	ggt	tca	tat	480
Leu	Thr	Gly	Arg	Lys	Thr	Ile	Ala	Val	Leu	Asp	Ile	Ser	Val	Ser	Tyr	
					150					155					160	
aat	aga	tca	ata	act	act	att	cac	tac	aac	gac	gac	ggt	gat	ata	gat	528
Asn	Arg	Ser	Ile	Thr	Thr	Ile	His	Tyr	Asn	Asp	Asp	Val	Asp	Ile	Asp	
				165				170						175		
ata	cat	act	gat	aaa	aat	gga	aaa	gag	tta	tgt	tat	tgt	tat	ata	aca	576
Ile	His	Thr	Asp	Lys	Asn	Gly	Lys	Glu	Leu	Cys	Tyr	Cys	Tyr	Ile	Thr	
			180					185					190			
ata	gat	gat	cat	tac	ttg	ggt	gat	gtg	gaa	act	ata	gga	ggt	ata	gtc	624
Ile	Asp	Asp	His	Tyr	Leu	Val	Asp	Val	Glu	Thr	Ile	Gly	Val	Ile	Val	
			195				200					205				
aat	aga	tct	gga	aaa	tgt	ctg	tta	gta	aat	aac	cat	cta	ggt	ata	ggt	672
Asn	Arg	Ser	Gly	Lys	Cys	Leu	Leu	Val	Asn	Asn	His	Leu	Gly	Ile	Gly	
		210				215					220					
atc	ggt	aaa	gat	aaa	cgt	ata	agc	gat	agt	ttt	gga	gat	gta	tgt	atg	720
Ile	Val	Lys	Asp	Lys	Arg	Ile	Ser	Asp	Ser	Phe	Gly	Asp	Val	Cys	Met	
					230					235					240	
gat	aca	ata	ttt	gac	ttt	tct	gaa	gca	cga	gag	tta	ttt	tca	tta	act	768
Asp	Thr	Ile	Phe	Asp	Phe	Ser	Glu	Ala	Arg	Glu	Leu	Phe	Ser	Leu	Thr	
				245					250					255		
aat	gat	gat	aac	aga	aat	ata	gca	tgg	gac	act	gat	aaa	cta	gac	gat	816
Asn	Asp	Asp	Asn	Arg	Asn	Ile	Ala	Trp	Asp	Thr	Asp	Lys	Leu	Asp	Asp	
			260					265					270			
gat	aca	gat	ata	tgg	act	ccc	gtc	aca	gaa	gat	gat	tac	aaa	ttt	ctt	864
Asp	Thr	Asp	Ile	Trp	Thr	Pro	Val	Thr	Glu	Asp	Asp	Tyr	Lys	Phe	Leu	
			275				280					285				
tct	aga	cta	gta	ttg	tat	gca	aaa	tct	caa	tcg	gat	act	gta	ttc	gac	912
Ser	Arg	Leu	Val	Leu	Tyr	Ala	Lys	Ser	Gln	Ser	Asp	Thr	Val	Phe	Asp	
		290				295					300					
tat	tat	ggt	ctt	act	ggt	gat	acg	gaa	cca	ccc	act	gta	ttc	att	ttc	960
Tyr	Tyr	Val	Leu	Thr	Gly	Asp	Thr	Glu	Pro	Pro	Thr	Val	Phe	Ile	Phe	
		305			310					315					320	
aag	gta	act	aga	ttt	tac	ttt	aat	atg	ctg	aaa	taa					996
Lys	Val	Thr	Arg	Phe	Tyr	Phe	Asn	Met	Leu	Lys	*					
				325					330							

<210> 444
 <211> 331
 <212> PRT

<213> vaccinia virus

<400> 444

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Met Asp Ile Tyr Asp Asp Lys Gly Leu Gln Thr Ile Lys Leu Phe Asn
 1          5          10          15
Asn Glu Phe Asp Cys Ile Arg Asn Asp Ile Arg Glu Leu Phe Lys His
 20          25          30
Val Thr Asp Ser Asp Ser Ile Gln Leu Pro Met Glu Asp Asn Ser Asp
 35          40          45
Ile Ile Glu Asn Ile Arg Lys Ile Leu Tyr Arg Arg Leu Lys Asn Val
 50          55          60
Glu Cys Val Asp Ile Asp Asn Thr Ile Thr Phe Met Lys Tyr Asp Pro
 65          70          75          80
Asn Asp Asp Asn Lys Arg Thr Cys Ser Asn Trp Val Pro Leu Thr Asn
 85          90          95
Asn Tyr Met Glu Tyr Cys Leu Val Ile Tyr Leu Glu Thr Pro Ile Cys
100          105          110
Gly Gly Lys Ile Lys Leu Tyr His Pro Thr Gly Asn Ile Lys Ser Asp
115          120          125
Lys Asp Ile Met Phe Ala Lys Thr Leu Asp Phe Lys Ser Lys Lys Val
130          135          140
Leu Thr Gly Arg Lys Thr Ile Ala Val Leu Asp Ile Ser Val Ser Tyr
145          150          155          160
Asn Arg Ser Ile Thr Thr Ile His Tyr Asn Asp Asp Val Asp Ile Asp
165          170          175
Ile His Thr Asp Lys Asn Gly Lys Glu Leu Cys Tyr Cys Tyr Ile Thr
180          185          190
Ile Asp Asp His Tyr Leu Val Asp Val Glu Thr Ile Gly Val Ile Val
195          200          205
Asn Arg Ser Gly Lys Cys Leu Leu Val Asn Asn His Leu Gly Ile Gly
210          215          220
Ile Val Lys Asp Lys Arg Ile Ser Asp Ser Phe Gly Asp Val Cys Met
225          230          235          240
Asp Thr Ile Phe Asp Phe Ser Glu Ala Arg Glu Leu Phe Ser Leu Thr
245          250          255
Asn Asp Asp Asn Arg Asn Ile Ala Trp Asp Thr Asp Lys Leu Asp Asp
260          265          270
Asp Thr Asp Ile Trp Thr Pro Val Thr Glu Asp Asp Tyr Lys Phe Leu
275          280          285
Ser Arg Leu Val Leu Tyr Ala Lys Ser Gln Ser Asp Thr Val Phe Asp
290          295          300
Tyr Tyr Val Leu Thr Gly Asp Thr Glu Pro Pro Thr Val Phe Ile Phe
305          310          315          320
Lys Val Thr Arg Phe Tyr Phe Asn Met Leu Lys
          325          330
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<210> 445

<211> 417

<212> DNA

<213> vaccinia virus

<220>

<221> CDS

<222> (1)...(417)

<400> 445

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atg tcg atg aaa tat ctg atg ttg ttg ttc gct gct atg ata atc aga
Met Ser Met Lys Tyr Leu Met Leu Leu Phe Ala Ala Met Ile Ile Arg
```

48

1	5	10	15	
tca ttc gcc gat agt ggt aac gct atc gaa acg aca ttg cca gaa att	96			
Ser Phe Ala Asp Ser Gly Asn Ala Ile Glu Thr Thr Leu Pro Glu Ile				
20 25 30				
aca aac gct aca aca gat att cca gct atc aga tta tgc ggt cca gag	144			
Thr Asn Ala Thr Thr Asp Ile Pro Ala Ile Arg Leu Cys Gly Pro Glu				
35 40 45				
gga gat gga tat tgt tta cac ggt gac tgt atc cac gct aga gat atc	192			
Gly Asp Gly Tyr Cys Leu His Gly Asp Cys Ile His Ala Arg Asp Ile				
50 55 60				
gac ggt atg tat tgt aga tgc tct cat ggt tat aca ggc att aga tgt	240			
Asp Gly Met Tyr Cys Arg Cys Ser His Gly Tyr Thr Gly Ile Arg Cys				
65 70 75 80				
cag cat gta gta tta gta gac tat caa cgt tca gaa aaa cca aac act	288			
Gln His Val Val Leu Val Asp Tyr Gln Arg Ser Glu Lys Pro Asn Thr				
85 90 95				
aca acg tca tat atc cca tct ccc ggt att atg ctt gta tta gta ggc	336			
Thr Thr Ser Tyr Ile Pro Ser Pro Gly Ile Met Leu Val Val Gly				
100 105 110				
att att att atg tgt tgt cta tta tct gtt tat agg ttc act cga cga	384			
Ile Ile Ile Met Cys Cys Leu Leu Ser Val Tyr Arg Phe Thr Arg Arg				
115 120 125				
act aaa cta cct cta caa gat atg gtt gtg cca	417			
Thr Lys Leu Pro Leu Gln Asp Met Val Val Pro				
130 135				

<210> 446
 <211> 139
 <212> PRT
 <213> vaccinia virus

<400> 446

Met Ser Met Lys Tyr Leu Met Leu Leu Phe Ala Ala Met Ile Ile Arg	
1 5 10 15	
Ser Phe Ala Asp Ser Gly Asn Ala Ile Glu Thr Thr Leu Pro Glu Ile	
20 25 30	
Thr Asn Ala Thr Thr Asp Ile Pro Ala Ile Arg Leu Cys Gly Pro Glu	
35 40 45	
Gly Asp Gly Tyr Cys Leu His Gly Asp Cys Ile His Ala Arg Asp Ile	
50 55 60	
Asp Gly Met Tyr Cys Arg Cys Ser His Gly Tyr Thr Gly Ile Arg Cys	
65 70 75 80	
Gln His Val Val Leu Val Asp Tyr Gln Arg Ser Glu Lys Pro Asn Thr	
85 90 95	
Thr Thr Ser Tyr Ile Pro Ser Pro Gly Ile Met Leu Val Leu Val Gly	
100 105 110	
Ile Ile Ile Met Cys Cys Leu Leu Ser Val Tyr Arg Phe Thr Arg Arg	
115 120 125	
Thr Lys Leu Pro Leu Gln Asp Met Val Val Pro	
130 135	

<210> 447
 <211> 1074
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1074)

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<400> 447
atg gat atc ttt aaa gaa cta atc gta aaa cac cct gat gaa aat gtt 48
Met Asp Ile Phe Lys Glu Leu Ile Val Lys His Pro Asp Glu Asn Val
1 5 10 15

ttg att tct cca gtt tcc att tta tct act tta tct att cta aat cat 96
Leu Ile Ser Pro Val Ser Ile Leu Ser Thr Leu Ser Ile Leu Asn His
20 25 30

gga gca gct ggt tct aca gct gaa caa cta tca aaa tat ata gag aat 144
Gly Ala Ala Gly Ser Thr Ala Glu Gln Leu Ser Lys Tyr Ile Glu Asn
35 40 45

atg aat gag aat aca ccc gat gat aag aag gat gac aat aat gac atg 192
Met Asn Glu Asn Thr Pro Asp Asp Lys Lys Asp Asp Asn Asn Asp Met
50 55 60

gac gta gat att ccg tat tgt gcg aca cta gct acc gca aat aaa ata 240
Asp Val Asp Ile Pro Tyr Cys Ala Thr Leu Ala Thr Ala Asn Lys Ile
65 70 75 80

tac ggt agc gat agt atc gag ttc cat gcc tcc ttc cta caa aaa ata 288
Tyr Gly Ser Asp Ser Ile Glu Phe His Ala Ser Phe Leu Gln Lys Ile
85 90 95

aaa gac gat ttt caa act gta aac ttt aat aat gct aac caa aca aag 336
Lys Asp Asp Phe Gln Thr Val Asn Phe Asn Asn Ala Asn Gln Thr Lys
100 105 110

gaa cta atc aac gaa tgg gtt aag aca atg aca aat ggt aaa att aat 384
Glu Leu Ile Asn Glu Trp Val Lys Thr Met Thr Asn Gly Lys Ile Asn
115 120 125

tcc tta ttg act agt ccg cta tcc att aat act cgt atg aca gtt gtt 432
Ser Leu Leu Thr Ser Pro Leu Ser Ile Asn Thr Arg Met Thr Val Val
130 135 140

agc gcc gtc cat ttt aaa gca atg tgg aaa tat cca ttt tct aaa cat 480
Ser Ala Val His Phe Lys Ala Met Trp Lys Tyr Pro Phe Ser Lys His
145 150 155 160

ctt aca tat aca gac aag ttt tat att tct aag aat ata gtt acc agc 528
Leu Thr Tyr Thr Asp Lys Phe Tyr Ile Ser Lys Asn Ile Val Thr Ser
165 170 175

gtt gat atg atg gtg ggt acc gag aat aac ttg caa tat gta cat att 576
Val Asp Met Met Val Gly Thr Glu Asn Asn Leu Gln Tyr Val His Ile
180 185 190

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aat gaa tta ttc gga gga ttc tct att atc gat att cca tac gag gga	624
Asn Glu Leu Phe Gly Gly Phe Ser Ile Ile Asp Ile Pro Tyr Glu Gly	
195 200 205	
aac tct agt atg gtg att ata cta ccg gac gac ata gaa ggt ata tat	672
Asn Ser Ser Met Val Ile Ile Leu Pro Asp Asp Ile Glu Gly Ile Tyr	
210 215 220	
aac ata gaa aaa aat ata aca gat gaa aaa ttt aaa aaa tgg tgt ggt	720
Asn Ile Glu Lys Asn Ile Thr Asp Glu Lys Phe Lys Lys Trp Cys Gly	
225 230 235 240	
atg tta tct act aaa agt ata gac ttg tat atg cca aag ttt aaa gtg	768
Met Leu Ser Thr Lys Ser Ile Asp Leu Tyr Met Pro Lys Phe Lys Val	
245 250 255	
gaa atg aca gaa ccg tat aat ctg gta cct att cta gaa aat tta gga	816
Glu Met Thr Glu Pro Tyr Asn Leu Val Pro Ile Leu Glu Asn Leu Gly	
260 265 270	
ctt act aat ata ttc gga tat tat gca gat ttt agc aag atg tgt aat	864
Leu Thr Asn Ile Phe Gly Tyr Tyr Ala Asp Phe Ser Lys Met Cys Asn	
275 280 285	
gaa act atc act gta gaa aaa ttt cta cat acg acg ttt ata gat gtt	912
Glu Thr Ile Thr Val Glu Lys Phe Leu His Thr Thr Phe Ile Asp Val	
290 295 300	
aat gag gag tat aca gaa gca tcg gcc gtt aca gga gta ttt atg act	960
Asn Glu Glu Tyr Thr Glu Ala Ser Ala Val Thr Gly Val Phe Met Thr	
305 310 315 320	
aac ttt tcg atg gta tat cgt acg aag gtc tac ata aac cat cca ttc	1008
Asn Phe Ser Met Val Tyr Arg Thr Lys Val Tyr Ile Asn His Pro Phe	
325 330 335	
atg tac atg att aaa gac aac aca gga cgt ata ctt ttt ata ggg aaa	1056
Met Tyr Met Ile Lys Asp Asn Thr Gly Arg Ile Leu Phe Ile Gly Lys	
340 345 350	
tac tgc tat ccg caa taa	1074
Tyr Cys Tyr Pro Gln *	
355	

<210> 448

<211> 357

<212> PRT

<213> vaccinia virus

<400> 448

Met Asp Ile Phe Lys Glu Leu Ile Val Lys His Pro Asp Glu Asn Val	
1 5 10 15	
Leu Ile Ser Pro Val Ser Ile Leu Ser Thr Leu Ser Ile Leu Asn His	
20 25 30	
Gly Ala Ala Gly Ser Thr Ala Glu Gln Leu Ser Lys Tyr Ile Glu Asn	
35 40 45	
Met Asn Glu Asn Thr Pro Asp Lys Lys Asp Asp Asn Asn Asp Met	
50 55 60	

Asp	Val	Asp	Ile	Pro	Tyr	Cys	Ala	Thr	Leu	Ala	Thr	Ala	Asn	Lys	Ile	
65					70					75					80	
Tyr	Gly	Ser	Asp	Ser	Ile	Glu	Phe	His	Ala	Ser	Phe	Leu	Gln	Lys	Ile	
				85					90					95		
Lys	Asp	Asp	Phe	Gln	Thr	Val	Asn	Phe	Asn	Asn	Ala	Asn	Gln	Thr	Lys	
			100					105					110			
Glu	Leu	Ile	Asn	Glu	Trp	Val	Lys	Thr	Met	Thr	Asn	Gly	Lys	Ile	Asn	
		115					120					125				
Ser	Leu	Leu	Thr	Ser	Pro	Leu	Ser	Ile	Asn	Thr	Arg	Met	Thr	Val	Val	
	130					135					140					
Ser	Ala	Val	His	Phe	Lys	Ala	Met	Trp	Lys	Tyr	Pro	Phe	Ser	Lys	His	
145					150					155					160	
Leu	Thr	Tyr	Thr	Asp	Lys	Phe	Tyr	Ile	Ser	Lys	Asn	Ile	Val	Thr	Ser	
				165					170					175		
Val	Asp	Met	Met	Val	Gly	Thr	Glu	Asn	Leu	Gln	Tyr	Val	His	Ile		
			180					185					190			
Asn	Glu	Leu	Phe	Gly	Gly	Phe	Ser	Ile	Ile	Asp	Ile	Pro	Tyr	Glu	Gly	
		195					200					205				
Asn	Ser	Ser	Met	Val	Ile	Ile	Leu	Pro	Asp	Asp	Ile	Glu	Gly	Ile	Tyr	
	210				215						220					
Asn	Ile	Glu	Lys	Asn	Ile	Thr	Asp	Glu	Lys	Phe	Lys	Lys	Trp	Cys	Gly	
225				230						235					240	
Met	Leu	Ser	Thr	Lys	Ser	Ile	Asp	Leu	Tyr	Met	Pro	Lys	Phe	Lys	Val	
				245					250					255		
Glu	Met	Thr	Glu	Pro	Tyr	Asn	Leu	Val	Pro	Ile	Leu	Glu	Asn	Leu	Gly	
			260					265					270			
Leu	Thr	Asn	Ile	Phe	Gly	Tyr	Tyr	Ala	Asp	Phe	Ser	Lys	Met	Cys	Asn	
		275					280					285				
Glu	Thr	Ile	Thr	Val	Glu	Lys	Phe	Leu	His	Thr	Thr	Phe	Ile	Asp	Val	
	290				295						300					
Asn	Glu	Glu	Tyr	Thr	Glu	Ala	Ser	Ala	Val	Thr	Gly	Val	Phe	Met	Thr	
305					310					315					320	
Asn	Phe	Ser	Met	Val	Tyr	Arg	Thr	Lys	Val	Tyr	Ile	Asn	His	Pro	Phe	
				325					330					335		
Met	Tyr	Met	Ile	Lys	Asp	Asn	Thr	Gly	Arg	Ile	Leu	Phe	Ile	Gly	Lys	
			340					345					350			
Tyr	Cys	Tyr	Pro	Gln												
		355														

<210> 449
 <211> 573
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(573)

<400> 449																
atg	atg	ata	tac	gga	tta	ata	gcg	tgt	ctt	ata	ttc	gtg	act	tca	tcc	48
Met	Met	Ile	Tyr	Gly	Leu	Ile	Ala	Cys	Leu	Ile	Phe	Val	Thr	Ser	Ser	
1				5					10					15		
atc	gct	agt	cca	ctt	tat	att	ccc	gtt	att	cca	ccc	att	acg	gaa	gat	96
Ile	Ala	Ser	Pro	Leu	Tyr	Ile	Pro	Val	Ile	Pro	Pro	Ile	Thr	Glu	Asp	
			20					25					30			
aaa	tcg	ttc	aat	agt	gta	gag	gta	tta	gtt	tcc	ttg	ttt	aga	gat	gac	144

Lys	Ser	Phe	Asn	Ser	Val	Glu	Val	Leu	Val	Ser	Leu	Phe	Arg	Asp	Asp	
		35					40					45				
caa	aaa	gac	tat	acg	gta	act	tct	cag	ttc	aat	aac	tac	act	atc	gat	192
Gln	Lys	Asp	Tyr	Thr	Val	Thr	Ser	Gln	Phe	Asn	Asn	Tyr	Thr	Ile	Asp	
	50					55					60					
acc	aaa	gac	tgg	act	atc	ggc	gta	cta	tcc	aca	cct	gat	ggg	ttg	gat	240
Thr	Lys	Asp	Trp	Thr	Ile	Gly	Val	Leu	Ser	Thr	Pro	Asp	Gly	Leu	Asp	
	65				70					75					80	
ata	cca	ttg	act	aat	ata	act	tat	tgg	tca	cgg	ttt	act	ata	ggg	cgt	288
Ile	Pro	Leu	Thr	Asn	Ile	Thr	Tyr	Trp	Ser	Arg	Phe	Thr	Ile	Gly	Arg	
				85					90					95		
gca	ttg	ttc	aaa	tca	gag	tct	gag	gat	att	ttc	caa	aag	aaa	atg	agt	336
Ala	Leu	Phe	Lys	Ser	Glu	Ser	Glu	Asp	Ile	Phe	Gln	Lys	Lys	Met	Ser	
			100					105						110		
att	cta	ggg	gtt	tct	ata	gaa	tgt	aag	aag	tcg	tcg	aca	tta	ctt	act	384
Ile	Leu	Gly	Val	Ser	Ile	Glu	Cys	Lys	Lys	Ser	Ser	Thr	Leu	Leu	Thr	
		115					120					125				
ttt	ttg	acc	gtg	cgt	aaa	atg	act	cga	gta	ttt	aat	aaa	ttt	cca	gat	432
Phe	Leu	Thr	Val	Arg	Lys	Met	Thr	Arg	Val	Phe	Asn	Lys	Phe	Pro	Asp	
	130					135					140					
atg	gct	tat	tat	cga	gga	gac	tgt	tta	aaa	gcc	gtt	tat	gta	aca	atg	480
Met	Ala	Tyr	Tyr	Arg	Gly	Asp	Cys	Leu	Lys	Ala	Val	Tyr	Val	Thr	Met	
	145				150					155					160	
act	tat	aaa	aat	act	aaa	act	gga	gag	act	gat	tac	acg	tac	ctc	tct	528
Thr	Tyr	Lys	Asn	Thr	Lys	Thr	Gly	Glu	Thr	Asp	Tyr	Thr	Tyr	Leu	Ser	
				165					170					175		
aat	ggg	ggg	ttg	cct	gca	tac	tat	cgt	aat	ggg	gtc	gat	ggg	tga		573
Asn	Gly	Gly	Leu	Pro	Ala	Tyr	Tyr	Arg	Asn	Gly	Val	Asp	Gly	*		
			180					185					190			

<210> 450
 <211> 190
 <212> PRT
 <213> vaccinia virus

<400> 450

Met	Met	Ile	Tyr	Gly	Leu	Ile	Ala	Cys	Leu	Ile	Phe	Val	Thr	Ser	Ser	
1				5					10					15		
Ile	Ala	Ser	Pro	Leu	Tyr	Ile	Pro	Val	Ile	Pro	Pro	Ile	Thr	Glu	Asp	
			20					25					30			
Lys	Ser	Phe	Asn	Ser	Val	Glu	Val	Leu	Val	Ser	Leu	Phe	Arg	Asp	Asp	
		35				40						45				
Gln	Lys	Asp	Tyr	Thr	Val	Thr	Ser	Gln	Phe	Asn	Asn	Tyr	Thr	Ile	Asp	
	50					55					60					
Thr	Lys	Asp	Trp	Thr	Ile	Gly	Val	Leu	Ser	Thr	Pro	Asp	Gly	Leu	Asp	
	65				70					75				80		
Ile	Pro	Leu	Thr	Asn	Ile	Thr	Tyr	Trp	Ser	Arg	Phe	Thr	Ile	Gly	Arg	
				85					90					95		

Ala	Leu	Phe	Lys	Ser	Glu	Ser	Glu	Asp	Ile	Phe	Gln	Lys	Lys	Met	Ser
			100					105					110		
Ile	Leu	Gly	Val	Ser	Ile	Glu	Cys	Lys	Lys	Ser	Ser	Thr	Leu	Leu	Thr
		115					120					125			
Phe	Leu	Thr	Val	Arg	Lys	Met	Thr	Arg	Val	Phe	Asn	Lys	Phe	Pro	Asp
		130				135					140				
Met	Ala	Tyr	Tyr	Arg	Gly	Asp	Cys	Leu	Lys	Ala	Val	Tyr	Val	Thr	Met
145					150					155					160
Thr	Tyr	Lys	Asn	Thr	Lys	Thr	Gly	Glu	Thr	Asp	Tyr	Thr	Tyr	Leu	Ser
			165						170					175	
Asn	Gly	Gly	Leu	Pro	Ala	Tyr	Tyr	Arg	Asn	Gly	Val	Asp	Gly		
			180					185					190		

<210> 451
 <211> 156
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(156)

<400> 451																
atg	aat	tta	cag	aaa	tta	tct	ctg	gct	ata	tat	ctt	act	gcg	aca	tgt	48
Met	Asn	Leu	Gln	Lys	Leu	Ser	Leu	Ala	Ile	Tyr	Leu	Thr	Ala	Thr	Cys	
1				5					10					15		
tcg	tgg	tgt	tat	gaa	aca	tgc	ata	aga	aaa	act	gcg	ttg	tat	cat	gac	96
Ser	Trp	Cys	Tyr	Glu	Thr	Cys	Ile	Arg	Lys	Thr	Ala	Leu	Tyr	His	Asp	
			20					25					30			
att	caa	ttg	gag	cat	gta	gaa	gac	aat	aaa	gat	agt	gta	gcg	tcg	cta	144
Ile	Gln	Leu	Glu	His	Val	Glu	Asp	Asn	Lys	Asp	Ser	Val	Ala	Ser	Leu	
		35					40					45				
ccg	tac	aag	tag													156
Pro	Tyr	Lys	*													
		50														

<210> 452
 <211> 51
 <212> PRT
 <213> vaccinia virus

<400> 452															
Met	Asn	Leu	Gln	Lys	Leu	Ser	Leu	Ala	Ile	Tyr	Leu	Thr	Ala	Thr	Cys
1				5					10					15	
Ser	Trp	Cys	Tyr	Glu	Thr	Cys	Ile	Arg	Lys	Thr	Ala	Leu	Tyr	His	Asp
			20					25					30		
Ile	Gln	Leu	Glu	His	Val	Glu	Asp	Asn	Lys	Asp	Ser	Val	Ala	Ser	Leu
		35					40					45			
Pro	Tyr	Lys													
		50													

<210> 453
 <211> 270

<212> DNA
<213> vaccinia virus

<220>
<221> CDS
<222> (1)...(270)

<400> 453
atg tcg tta gaa tca ttt atc ata act acg ttt aat aat aat tca tca 48
Met Ser Leu Glu Ser Phe Ile Ile Thr Thr Phe Asn Asn Asn Ser Ser
1 5 10 15
acg aat atc gat aac atg tgt cat tta tac gtt aaa gtc tgt ccg tct 96
Thr Asn Ile Asp Asn Met Cys His Leu Tyr Val Lys Val Cys Pro Ser
20 25 30
tct cta ttg ttt aga ctg ttt gta gaa tgc tgt gat ata aac aaa cta 144
Ser Leu Leu Phe Arg Leu Phe Val Glu Cys Cys Asp Ile Asn Lys Leu
35 40 45
gta gaa ggt acg act ccg tta cac tgt tat cta atg aat gaa gga ttt 192
Val Glu Gly Thr Thr Pro Leu His Cys Tyr Leu Met Asn Glu Gly Phe
50 55 60
gaa tca tct gtt tta aaa aac cta tta aag gag tat gtc atg aca gtg 240
Glu Ser Ser Val Leu Lys Asn Leu Leu Lys Glu Tyr Val Met Thr Val
65 70 75 80
atg gtc aca ttc cat tac aca aat att taa 270
Met Val Thr Phe His Tyr Thr Asn Ile *

<210> 454
<211> 89
<212> PRT
<213> vaccinia virus

<400> 454
Met Ser Leu Glu Ser Phe Ile Ile Thr Thr Phe Asn Asn Asn Ser Ser
1 5 10 15
Thr Asn Ile Asp Asn Met Cys His Leu Tyr Val Lys Val Cys Pro Ser
20 25 30
Ser Leu Leu Phe Arg Leu Phe Val Glu Cys Cys Asp Ile Asn Lys Leu
35 40 45
Val Glu Gly Thr Thr Pro Leu His Cys Tyr Leu Met Asn Glu Gly Phe
50 55 60
Glu Ser Ser Val Leu Lys Asn Leu Leu Lys Glu Tyr Val Met Thr Val
65 70 75 80
Met Val Thr Phe His Tyr Thr Asn Ile
85

<210> 455
<211> 546
<212> DNA
<213> vaccinia virus

<220>

<221> CDS
 <222> (1)...(546)

<400> 455

atg ata tca ctc tca ttc ctc atc cac aac cca tta aaa aaa tgg aaa	48
Met Ile Ser Leu Ser Phe Leu Ile His Asn Pro Leu Lys Lys Trp Lys	
1 5 10 15	
tta aag ccc tct att agc ata aac ggc tac agg tct acc ttt aca atg	96
Leu Lys Pro Ser Ile Ser Ile Asn Gly Tyr Arg Ser Thr Phe Thr Met	
20 25 30	
gcc ttt cct tgt gcc cag ttc aga ccc tgt cat tgc cac gct act aag	144
Ala Phe Pro Cys Ala Gln Phe Arg Pro Cys His Cys His Ala Thr Lys	
35 40 45	
gac tcc ctg aat acc gtg gcc gac gtc aga cat tgt ctg act gaa tac	192
Asp Ser Leu Asn Thr Val Ala Asp Val Arg His Cys Leu Thr Glu Tyr	
50 55 60	
atc ctg tgg gtt tct cat aga tgg acc cat aga gaa act gca ggg cct	240
Ile Leu Trp Val Ser His Arg Trp Thr His Arg Glu Thr Ala Gly Pro	
65 70 75 80	
ctc tac agg ctt ctc atc tct ttc aga act gat gca acg gag ctc ttt	288
Leu Tyr Arg Leu Leu Ile Ser Phe Arg Thr Asp Ala Thr Glu Leu Phe	
85 90 95	
ggg ggt gag ttg aag gat tca ctt ccg tgg gac aat atc gac aat tgc	336
Gly Gly Glu Leu Lys Asp Ser Leu Pro Trp Asp Asn Ile Asp Asn Cys	
100 105 110	
gtg gag atc att aaa tgt ttc atc aga aat gac tcc atg aaa acc gcc	384
Val Glu Ile Ile Lys Cys Phe Ile Arg Asn Asp Ser Met Lys Thr Ala	
115 120 125	
gaa gaa ctt cgt gca atc att gga ctt tgt act caa tca gct atc gtc	432
Glu Glu Leu Arg Ala Ile Ile Gly Leu Cys Thr Gln Ser Ala Ile Val	
130 135 140	
tct gga aga gtc ttc aac gat aag tat atc gac ata cta ctt atg ctg	480
Ser Gly Arg Val Phe Asn Asp Lys Tyr Ile Asp Ile Leu Leu Met Leu	
145 150 155 160	
cga aag att ctg aac gag aac gac tat ctc acc ctc ttg gat cat atc	528
Arg Lys Ile Leu Asn Glu Asn Asp Tyr Leu Thr Leu Leu Asp His Ile	
165 170 175	
cgc act gct aaa tac taa	546
Arg Thr Ala Lys Tyr *	
180	

<210> 456
 <211> 181
 <212> PRT
 <213> vaccinia virus

<400> 456

Met	Ile	Ser	Leu	Ser	Phe	Leu	Ile	His	Asn	Pro	Leu	Lys	Lys	Trp	Lys
1				5					10					15	
Leu	Lys	Pro	Ser	Ile	Ser	Ile	Asn	Gly	Tyr	Arg	Ser	Thr	Phe	Thr	Met
		20						25					30		
Ala	Phe	Pro	Cys	Ala	Gln	Phe	Arg	Pro	Cys	His	Cys	His	Ala	Thr	Lys
		35					40					45			
Asp	Ser	Leu	Asn	Thr	Val	Ala	Asp	Val	Arg	His	Cys	Leu	Thr	Glu	Tyr
	50					55					60				
Ile	Leu	Trp	Val	Ser	His	Arg	Trp	Thr	His	Arg	Glu	Thr	Ala	Gly	Pro
65					70					75					80
Leu	Tyr	Arg	Leu	Leu	Ile	Ser	Phe	Arg	Thr	Asp	Ala	Thr	Glu	Leu	Phe
			85					90					95		
Gly	Gly	Glu	Leu	Lys	Asp	Ser	Leu	Pro	Trp	Asp	Asn	Ile	Asp	Asn	Cys
			100					105					110		
Val	Glu	Ile	Ile	Lys	Cys	Phe	Ile	Arg	Asn	Asp	Ser	Met	Lys	Thr	Ala
		115					120					125			
Glu	Glu	Leu	Arg	Ala	Ile	Ile	Gly	Leu	Cys	Thr	Gln	Ser	Ala	Ile	Val
	130					135					140				
Ser	Gly	Arg	Val	Phe	Asn	Asp	Lys	Tyr	Ile	Asp	Ile	Leu	Leu	Met	Leu
145					150					155					160
Arg	Lys	Ile	Leu	Asn	Glu	Asn	Asp	Tyr	Leu	Thr	Leu	Leu	Asp	His	Ile
				165				170						175	
Arg	Thr	Ala	Lys	Tyr											
			180												

<210> 457
 <211> 1149
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(1149)

<400> 457																
atg	att	gcc	ttc	atc	att	ttt	cgt	gaa	ata	gga	ata	att	agc	acc	aga	48
Met	Ile	Ala	Phe	Ile	Ile	Phe	Arg	Glu	Ile	Gly	Ile	Ile	Ser	Thr	Arg	
1				5					10					15		
ata	gct	atg	gat	tgc	aca	tgt	att	cta	tgt	cgt	cta	ctg	gat	gaa	gat	96
Ile	Ala	Met	Asp	Cys	Thr	Cys	Ile	Leu	Cys	Arg	Leu	Leu	Asp	Glu	Asp	
			20					25					30			
gtg	acg	tac	aaa	aaa	ata	aaa	cta	gaa	att	gaa	acg	tgt	cac	aac	tta	144
Val	Thr	Tyr	Lys	Lys	Ile	Lys	Leu	Glu	Ile	Glu	Thr	Cys	His	Asn	Leu	
			35				40					45				
tca	aaa	cat	ata	gat	aga	cga	gga	aac	aat	gcg	cta	cat	tgt	tac	gtc	192
Ser	Lys	His	Ile	Asp	Arg	Arg	Gly	Asn	Asn	Ala	Leu	His	Cys	Tyr	Val	
			50			55					60					
ttc	aat	aaa	tgc	gat	aca	gac	att	aag	att	gtt	cga	ctg	tta	ctc	tct	240
Phe	Asn	Lys	Cys	Asp	Thr	Asp	Ile	Lys	Ile	Val	Arg	Leu	Leu	Leu	Ser	
			65			70				75					80	
cgc	gga	gtc	gag	aga	ctt	tgt	aga	aac	aac	gaa	gga	tta	act	ccg	cta	288
Arg	Gly	Val	Glu	Arg	Leu	Cys	Arg	Asn	Asn	Glu	Gly	Leu	Thr	Pro	Leu	
				85					90					95		

gga gta tac agt aag cat aga tac gtc aaa tct caa att gtg cat cta	336
Gly Val Tyr Ser Lys His Arg Tyr Val Lys Ser Gln Ile Val His Leu	
100 105 110	
ctg ata tcc agc tat tcg aat tcc tct aac gaa ctc aag tcg aat ata	384
Leu Ile Ser Ser Tyr Ser Asn Ser Ser Asn Glu Leu Lys Ser Asn Ile	
115 120 125	
aat gat ttc gat ctg tat tcg gat aat atc gac tta cgt ctg cta aaa	432
Asn Asp Phe Asp Leu Tyr Ser Asp Asn Ile Asp Leu Arg Leu Leu Lys	
130 135 140	
tac cta att gtg gat aaa cgg ata cgt ccg tcc aag aat acg aat tat	480
Tyr Leu Ile Val Asp Lys Arg Ile Arg Pro Ser Lys Asn Thr Asn Tyr	
145 150 155 160	
gca atc aat ggt ctc gga ttg gtg gat ata tac gta acg acg cct aat	528
Ala Ile Asn Gly Leu Gly Leu Val Asp Ile Tyr Val Thr Thr Pro Asn	
165 170 175	
ccg aga cca gaa gta ttg cta tgg ctt ctt aaa tca gaa tgt tac agc	576
Pro Arg Pro Glu Val Leu Leu Trp Leu Leu Lys Ser Glu Cys Tyr Ser	
180 185 190	
acc ggt tac gta ttt cgt acc tgt atg tac aac agt gat atg tgt aag	624
Thr Gly Tyr Val Phe Arg Thr Cys Met Tyr Asn Ser Asp Met Cys Lys	
195 200 205	
aac tct ctt cat tac tat ata tcg tct cat aga gaa tct caa tct cta	672
Asn Ser Leu His Tyr Tyr Ile Ser Ser His Arg Glu Ser Gln Ser Leu	
210 215 220	
tcc aag gat gta att aaa tgt ttg atc aat aac aat gtt tcc atc cat	720
Ser Lys Asp Val Ile Lys Cys Leu Ile Asn Asn Asn Val Ser Ile His	
225 230 235 240	
ggc aga gac gaa gga gga tct tta ccc atc caa tac tac tgg tct ttc	768
Gly Arg Asp Glu Gly Gly Ser Leu Pro Ile Gln Tyr Tyr Trp Ser Phe	
245 250 255	
tca acc ata gat ata gag att gtt aaa tta tta tta ata aag gat gtg	816
Ser Thr Ile Asp Ile Glu Ile Val Lys Leu Leu Leu Ile Lys Asp Val	
260 265 270	
gac acg tgt aga gta tac gac gtc agc cct ata tta gag gcg tat tat	864
Asp Thr Cys Arg Val Tyr Asp Val Ser Pro Ile Leu Glu Ala Tyr Tyr	
275 280 285	
cta aac aag cga ttt aga gta acc cca tat aat gta gac atg gaa atc	912
Leu Asn Lys Arg Phe Arg Val Thr Pro Tyr Asn Val Asp Met Glu Ile	
290 295 300	
gtt aat ctt ctt att gag aga cgt cat act ctt gtc gac gta atg cgt	960
Val Asn Leu Leu Ile Glu Arg Arg His Thr Leu Val Asp Val Met Arg	
305 310 315 320	
agt att act tcg tac gat tcc aga gaa tat aac cac tac atc atc gat	1008
Ser Ile Thr Ser Tyr Asp Ser Arg Glu Tyr Asn His Tyr Ile Ile Asp	

325										330					335					
aac	att	cta	aag	aga	ttt	aga	caa	cag	gat	gaa	tcc	atc	gta	caa	gcc	1056				
Asn	Ile	Leu	Lys	Arg	Phe	Arg	Gln	Gln	Asp	Glu	Ser	Ile	Val	Gln	Ala					
			340					345					350							
atg	ttg	ata	aac	tac	tta	cat	tac	ggc	gat	atg	gtc	gtt	cga	tgc	atg	1104				
Met	Leu	Ile	Asn	Tyr	Leu	His	Tyr	Gly	Asp	Met	Val	Val	Arg	Cys	Met					
		355					360					365								
tta	gat	aac	gga	caa	caa	cta	tcc	tct	gca	cga	cta	ctt	tgt	taa		1149				
Leu	Asp	Asn	Gly	Gln	Gln	Leu	Ser	Ser	Ala	Arg	Leu	Leu	Cys	*						
	370					375					380									

<210> 458
 <211> 382
 <212> PRT
 <213> vaccinia virus

<400> 458

Met	Ile	Ala	Phe	Ile	Ile	Phe	Arg	Glu	Ile	Gly	Ile	Ile	Ser	Thr	Arg
1				5					10					15	
Ile	Ala	Met	Asp	Cys	Thr	Cys	Ile	Leu	Cys	Arg	Leu	Leu	Asp	Glu	Asp
			20					25					30		
Val	Thr	Tyr	Lys	Lys	Ile	Lys	Leu	Glu	Ile	Glu	Thr	Cys	His	Asn	Leu
		35					40					45			
Ser	Lys	His	Ile	Asp	Arg	Arg	Gly	Asn	Asn	Ala	Leu	His	Cys	Tyr	Val
	50				55					60					
Phe	Asn	Lys	Cys	Asp	Thr	Asp	Ile	Lys	Ile	Val	Arg	Leu	Leu	Leu	Ser
65				70					75					80	
Arg	Gly	Val	Glu	Arg	Leu	Cys	Arg	Asn	Asn	Glu	Gly	Leu	Thr	Pro	Leu
			85					90					95		
Gly	Val	Tyr	Ser	Lys	His	Arg	Tyr	Val	Lys	Ser	Gln	Ile	Val	His	Leu
		100						105					110		
Leu	Ile	Ser	Ser	Tyr	Ser	Asn	Ser	Ser	Asn	Glu	Leu	Lys	Ser	Asn	Ile
		115				120						125			
Asn	Asp	Phe	Asp	Leu	Tyr	Ser	Asp	Asn	Ile	Asp	Leu	Arg	Leu	Leu	Lys
	130					135					140				
Tyr	Leu	Ile	Val	Asp	Lys	Arg	Ile	Arg	Pro	Ser	Lys	Asn	Thr	Asn	Tyr
145					150					155				160	
Ala	Ile	Asn	Gly	Leu	Gly	Leu	Val	Asp	Ile	Tyr	Val	Thr	Thr	Pro	Asn
			165					170						175	
Pro	Arg	Pro	Glu	Val	Leu	Leu	Trp	Leu	Leu	Lys	Ser	Glu	Cys	Tyr	Ser
			180				185						190		
Thr	Gly	Tyr	Val	Phe	Arg	Thr	Cys	Met	Tyr	Asn	Ser	Asp	Met	Cys	Lys
		195				200						205			
Asn	Ser	Leu	His	Tyr	Tyr	Ile	Ser	Ser	His	Arg	Glu	Ser	Gln	Ser	Leu
	210					215					220				
Ser	Lys	Asp	Val	Ile	Lys	Cys	Leu	Ile	Asn	Asn	Val	Ser	Ile	His	
225					230				235					240	
Gly	Arg	Asp	Glu	Gly	Gly	Ser	Leu	Pro	Ile	Gln	Tyr	Tyr	Trp	Ser	Phe
			245						250					255	
Ser	Thr	Ile	Asp	Ile	Glu	Ile	Val	Lys	Leu	Leu	Leu	Ile	Lys	Asp	Val
			260					265					270		
Asp	Thr	Cys	Arg	Val	Tyr	Asp	Val	Ser	Pro	Ile	Leu	Glu	Ala	Tyr	Tyr
		275				280						285			
Leu	Asn	Lys	Arg	Phe	Arg	Val	Thr	Pro	Tyr	Asn	Val	Asp	Met	Glu	Ile

290		295		300
Val Asn Leu Leu Ile Glu Arg Arg His Thr Leu Val Asp Val Met Arg				
305		310		315
Ser Ile Thr Ser Tyr Asp Ser Arg Glu Tyr Asn His Tyr Ile Ile Asp				
		325		330
Asn Ile Leu Lys Arg Phe Arg Gln Gln Asp Glu Ser Ile Val Gln Ala				
		340		345
Met Leu Ile Asn Tyr Leu His Tyr Gly Asp Met Val Val Arg Cys Met				
		355		360
Leu Asp Asn Gly Gln Gln Leu Ser Ser Ala Arg Leu Leu Cys				
370		375		380

<210> 459
 <211> 597
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(597)

<400> 459	
atg tac ggt ctg ata tta tcg aga ttt aat aat tgc ggg tat cac tgt	48
Met Tyr Gly Leu Ile Leu Ser Arg Phe Asn Asn Cys Gly Tyr His Cys	
1 5 10 15	
tat gaa acc ata cta ata gat gta ttt gat ata cta agc aag tac atg	96
Tyr Glu Thr Ile Leu Ile Asp Val Phe Asp Ile Leu Ser Lys Tyr Met	
20 25 30	
gat aat ata gat atg atc gat aat gag aat aaa act cta cta tat tac	144
Asp Asn Ile Asp Met Ile Asp Asn Glu Asn Lys Thr Leu Leu Tyr Tyr	
35 40 45	
gcg gtc gat gtc aat aat ata caa ttt gca aag cgg tta ttg gaa tat	192
Ala Val Asp Val Asn Asn Ile Gln Phe Ala Lys Arg Leu Leu Glu Tyr	
50 55 60	
gga gcg agt gtt aca aca tca cgc tcg ata atc aat acg gcc atc cag	240
Gly Ala Ser Val Thr Thr Ser Arg Ser Ile Ile Asn Thr Ala Ile Gln	
65 70 75 80	
aaa agt agt tac aga aga gaa aac aaa acg aag cta gtt gat tta tta	288
Lys Ser Ser Tyr Arg Arg Glu Asn Lys Thr Lys Leu Val Asp Leu Leu	
85 90 95	
ctt agc tac cat ccc act cta gag act atg att gac gca ttt aat aga	336
Leu Ser Tyr His Pro Thr Leu Glu Thr Met Ile Asp Ala Phe Asn Arg	
100 105 110	
gat ata cgc tat cta tat cct gaa cca tta ttc gcc tgt atc aga tac	384
Asp Ile Arg Tyr Leu Tyr Pro Glu Pro Leu Phe Ala Cys Ile Arg Tyr	
115 120 125	
gcc tta atc ata gat gat gat ttt cct tct aaa gta aag tat gat atc	432
Ala Leu Ile Ile Asp Asp Asp Phe Pro Ser Lys Val Lys Tyr Asp Ile	
130 135 140	

gcc ggt cgt cat aag gaa cta aag cgc tat aga gta gac att aat aga 480
 Ala Gly Arg His Lys Glu Leu Lys Arg Tyr Arg Val Asp Ile Asn Arg
 145 150 155 160

atg aag aat gcc tac ata tca ggc gtc tcc atg ttt gat ata tta ttt 528
 Met Lys Asn Ala Tyr Ile Ser Gly Val Ser Met Phe Asp Ile Leu Phe
 165 170 175

aaa cga agc aaa cgc cac aga ttg aga tac gca aag aat ccg aca tca 576
 Lys Arg Ser Lys Arg His Arg Leu Arg Tyr Ala Lys Asn Pro Thr Ser
 180 185 190

aat ggt aca aaa aag aac taa 597
 Asn Gly Thr Lys Lys Asn *
 195

<210> 460
 <211> 198
 <212> PRT
 <213> vaccinia virus

<400> 460
 Met Tyr Gly Leu Ile Leu Ser Arg Phe Asn Asn Cys Gly Tyr His Cys
 1 5 10 15
 Tyr Glu Thr Ile Leu Ile Asp Val Phe Asp Ile Leu Ser Lys Tyr Met
 20 25 30
 Asp Asn Ile Asp Met Ile Asp Asn Glu Asn Lys Thr Leu Leu Tyr Tyr
 35 40 45
 Ala Val Asp Val Asn Asn Ile Gln Phe Ala Lys Arg Leu Leu Glu Tyr
 50 55 60
 Gly Ala Ser Val Thr Thr Ser Arg Ser Ile Ile Asn Thr Ala Ile Gln
 65 70 75 80
 Lys Ser Ser Tyr Arg Arg Glu Asn Lys Thr Lys Leu Val Asp Leu Leu
 85 90 95
 Leu Ser Tyr His Pro Thr Leu Glu Thr Met Ile Asp Ala Phe Asn Arg
 100 105 110
 Asp Ile Arg Tyr Leu Tyr Pro Glu Pro Leu Phe Ala Cys Ile Arg Tyr
 115 120 125
 Ala Leu Ile Ile Asp Asp Asp Phe Pro Ser Lys Val Lys Tyr Asp Ile
 130 135 140
 Ala Gly Arg His Lys Glu Leu Lys Arg Tyr Arg Val Asp Ile Asn Arg
 145 150 155 160
 Met Lys Asn Ala Tyr Ile Ser Gly Val Ser Met Phe Asp Ile Leu Phe
 165 170 175
 Lys Arg Ser Lys Arg His Arg Leu Arg Tyr Ala Lys Asn Pro Thr Ser
 180 185 190
 Asn Gly Thr Lys Lys Asn
 195

<210> 461
 <211> 414
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)... (414)

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<400> 461
atg tct cgc ata aac att act aaa aaa ata tat tgt tcg gtt ttc ttt   48
Met Ser Arg Ile Asn Ile Thr Lys Lys Ile Tyr Cys Ser Val Phe Phe
  1           5           10           15

cac atc ttt aat tat gaa aaa gta aat cat tat gag atg gac gag att   96
His Ile Phe Asn Tyr Glu Lys Val Asn His Tyr Glu Met Asp Glu Ile
          20           25           30

gta cgc atc gtt cgc gac agt atg tgg tac ata cct aac gta ttt atg   144
Val Arg Ile Val Arg Asp Ser Met Trp Tyr Ile Pro Asn Val Phe Met
          35           40           45

gac gac ggt aag aat gaa ggt cac gtt tct gtc aac aat gtt tgt cat   192
Asp Asp Gly Lys Asn Glu Gly His Val Ser Val Asn Asn Val Cys His
          50           55           60

atg tat ttt acg ttc ttt gat gtg gat aca tcg tct cat ctg ttt aag   240
Met Tyr Phe Thr Phe Phe Asp Val Asp Thr Ser Ser His Leu Phe Lys
  65           70           75           80

cta gtt att aaa cac tgc gat ctg aat aaa cga ggt aac tct cca tta   288
Leu Val Ile Lys His Cys Asp Leu Asn Lys Arg Gly Asn Ser Pro Leu
          85           90           95

cat tgc tat acg atg aat aca cga ttt aat cca tct gta tta aag ata   336
His Cys Tyr Thr Met Asn Thr Arg Phe Asn Pro Ser Val Leu Lys Ile
          100          105          110

ttg tta cac cac ggc atg cgt aac ttt gat agc aag gat gac cac tat   384
Leu Leu His His Gly Met Arg Asn Phe Asp Ser Lys Asp Asp His Tyr
          115          120          125

caa tcg ata aca aga tct ttg ata tac taa   414
Gln Ser Ile Thr Arg Ser Leu Ile Tyr *
  130           135

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<210> 462
<211> 137
<212> PRT
<213> vaccinia virus

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<400> 462
Met Ser Arg Ile Asn Ile Thr Lys Lys Ile Tyr Cys Ser Val Phe Phe
  1           5           10           15
His Ile Phe Asn Tyr Glu Lys Val Asn His Tyr Glu Met Asp Glu Ile
          20           25           30
Val Arg Ile Val Arg Asp Ser Met Trp Tyr Ile Pro Asn Val Phe Met
          35           40           45
Asp Asp Gly Lys Asn Glu Gly His Val Ser Val Asn Asn Val Cys His
          50           55           60
Met Tyr Phe Thr Phe Phe Asp Val Asp Thr Ser Ser His Leu Phe Lys
          65           70           75           80
Leu Val Ile Lys His Cys Asp Leu Asn Lys Arg Gly Asn Ser Pro Leu
          85           90           95
His Cys Tyr Thr Met Asn Thr Arg Phe Asn Pro Ser Val Leu Lys Ile
          100          105          110
Leu Leu His His Gly Met Arg Asn Phe Asp Ser Lys Asp Asp His Tyr

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115 120 125
 Gln Ser Ile Thr Arg Ser Leu Ile Tyr
 130 135

<210> 463
 <211> 387
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(387)

<400> 463
 atg gag caa aca tta acg ccg tta cac act tac ctt caa cag tat acc 48
 Met Glu Gln Thr Leu Thr Pro Leu His Thr Tyr Leu Gln Gln Tyr Thr
 1 5 10 15
 aaa cat agt cct cgt gtg gtg tat gct ctt tta tct cga gga tac gta 96
 Lys His Ser Pro Arg Val Val Tyr Ala Leu Leu Ser Arg Gly Tyr Val
 20 25 30
 ata atc ttg att gta cac cca tca tgg aac gat tgt gca aca ggt cat 144
 Ile Ile Leu Ile Val His Pro Ser Trp Asn Asp Cys Ala Thr Gly His
 35 40 45
 att ctc ata atg tta ctc aat tgg cac gaa caa aag gaa gaa gga caa 192
 Ile Leu Ile Met Leu Leu Asn Trp His Glu Gln Lys Glu Glu Gly Gln
 50 55 60
 cat cta ctt tat cta ttc ata aaa cat aat caa gga tac act ctc aat 240
 His Leu Leu Tyr Leu Phe Ile Lys His Asn Gln Gly Tyr Thr Leu Asn
 65 70 75 80
 ata cta cgg tat cta cta gat agg ttc gac att cag aaa gac gaa tat 288
 Ile Leu Arg Tyr Leu Leu Asp Arg Phe Asp Ile Gln Lys Asp Glu Tyr
 85 90 95
 tat aat acc gcc ttt caa aat tgt aac aac aat gtt gcc tca tac atc 336
 Tyr Asn Thr Ala Phe Gln Asn Cys Asn Asn Val Ala Ser Tyr Ile
 100 105 110
 gga tac gac atc aac ctt ccg act aaa gac ggt att cga ctt ggt gtt 384
 Gly Tyr Asp Ile Asn Leu Pro Thr Lys Asp Gly Ile Arg Leu Gly Val
 115 120 125
 tga 387
 *

<210> 464
 <211> 128
 <212> PRT
 <213> vaccinia virus

<400> 464
 Met Glu Gln Thr Leu Thr Pro Leu His Thr Tyr Leu Gln Gln Tyr Thr

1				5				10					15			
Lys	His	Ser	Pro	Arg	Val	Val	Tyr	Ala	Leu	Leu	Ser	Arg	Gly	Tyr	Val	
			20					25					30			
Ile	Ile	Leu	Ile	Val	His	Pro	Ser	Trp	Asn	Asp	Cys	Ala	Thr	Gly	His	
		35					40					45				
Ile	Leu	Ile	Met	Leu	Leu	Asn	Trp	His	Glu	Gln	Lys	Glu	Glu	Gly	Gln	
	50					55					60					
His	Leu	Leu	Tyr	Leu	Phe	Ile	Lys	His	Asn	Gln	Gly	Tyr	Thr	Leu	Asn	
65					70					75					80	
Ile	Leu	Arg	Tyr	Leu	Leu	Asp	Arg	Phe	Asp	Ile	Gln	Lys	Asp	Glu	Tyr	
				85					90					95		
Tyr	Asn	Thr	Ala	Phe	Gln	Asn	Cys	Asn	Asn	Asn	Val	Ala	Ser	Tyr	Ile	
			100					105					110			
Gly	Tyr	Asp	Ile	Asn	Leu	Pro	Thr	Lys	Asp	Gly	Ile	Arg	Leu	Gly	Val	
		115					120					125				

<210> 465
 <211> 336
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(336)

<400> 465																
atg ttg cct cat aca tcg gat acg aca tca acc ttc cga cta aag acg	48															
Met Leu Pro His Thr Ser Asp Thr Thr Ser Thr Phe Arg Leu Lys Thr																
1 5 10 15																
gta ttc gac ttg gtg ttt gaa aac aga aac atc ata tac aag gcg gat	96															
Val Phe Asp Leu Val Phe Glu Asn Arg Asn Ile Ile Tyr Lys Ala Asp																
20 25 30																
gtt gtg aat gac atc atc cac cac aga ctg aaa gta cct atg att aaa	144															
Val Val Asn Asp Ile Ile His His Arg Leu Lys Val Pro Met Ile Lys																
35 40 45																
tcg ttg ttc tac aag atg tca gaa ttc tct ccc tac gac gat tac tac	192															
Ser Leu Phe Tyr Lys Met Ser Glu Phe Ser Pro Tyr Asp Asp Tyr Tyr																
50 55 60																
gta aaa aag ata cta gcc tac tgc cta tta agg gac gag tca ttc gcg	240															
Val Lys Lys Ile Leu Ala Tyr Cys Leu Leu Arg Asp Glu Ser Phe Ala																
65 70 75 80																
gaa cta cat agt aaa ttc tgt tta aac gag gac tat aaa agt gta ttt	288															
Glu Leu His Ser Lys Phe Cys Leu Asn Glu Asp Tyr Lys Ser Val Phe																
85 90 95																
atg aaa aat ata tca ttc gat aag ata gat tcc atc atc gtg aca taa	336															
Met Lys Asn Ile Ser Phe Asp Lys Ile Asp Ser Ile Ile Val Thr *																
100 105 110																

<210> 466
 <211> 111

<212> PRT
 <213> vaccinia virus

<400> 466

Met	Leu	Pro	His	Thr	Ser	Asp	Thr	Thr	Ser	Thr	Phe	Arg	Leu	Lys	Thr	
1				5					10					15		
Val	Phe	Asp	Leu	Val	Phe	Glu	Asn	Arg	Asn	Ile	Ile	Tyr	Lys	Ala	Asp	
		20						25					30			
Val	Val	Asn	Asp	Ile	Ile	His	His	Arg	Leu	Lys	Val	Pro	Met	Ile	Lys	
		35					40					45				
Ser	Leu	Phe	Tyr	Lys	Met	Ser	Glu	Phe	Ser	Pro	Tyr	Asp	Asp	Tyr	Tyr	
	50					55					60					
Val	Lys	Lys	Ile	Leu	Ala	Tyr	Cys	Leu	Leu	Arg	Asp	Glu	Ser	Phe	Ala	
65					70					75					80	
Glu	Leu	His	Ser	Lys	Phe	Cys	Leu	Asn	Glu	Asp	Tyr	Lys	Ser	Val	Phe	
			85						90					95		
Met	Lys	Asn	Ile	Ser	Phe	Asp	Lys	Ile	Asp	Ser	Ile	Ile	Val	Thr		
			100					105					110			

<210> 467
 <211> 369
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(369)

<400> 467

atg	aag	tcc	gta	tta	tac	tcg	tat	ata	ttg	ttt	ctc	tca	tgt	ata	ata	48
Met	Lys	Ser	Val	Leu	Tyr	Ser	Tyr	Ile	Leu	Phe	Leu	Ser	Cys	Ile	Ile	
1				5					10					15		
ata	aac	gga	aga	gat	ata	gca	ccg	cat	gca	cca	tcc	gat	gga	aag	tgt	96
Ile	Asn	Gly	Arg	Asp	Ile	Ala	Pro	His	Ala	Pro	Ser	Asp	Gly	Lys	Cys	
			20					25					30			
aaa	gac	aac	gaa	tac	aaa	cgc	cat	aat	ttg	tgt	ccg	gga	aca	tac	gct	144
Lys	Asp	Asn	Glu	Tyr	Lys	Arg	His	Asn	Leu	Cys	Pro	Gly	Thr	Tyr	Ala	
		35					40					45				
tcc	aga	tta	tgc	gat	agc	aag	act	aac	aca	caa	tgt	acg	ccg	tgt	ggc	192
Ser	Arg	Leu	Cys	Asp	Ser	Lys	Thr	Asn	Thr	Gln	Cys	Thr	Pro	Cys	Gly	
	50					55					60					
tcg	ggc	acc	ttc	aca	tct	cgc	aat	aat	cat	tta	ccc	gct	tgt	cta	agc	240
Ser	Gly	Thr	Phe	Thr	Ser	Arg	Asn	Asn	His	Leu	Pro	Ala	Cys	Leu	Ser	
	65				70				75					80		
tgt	aac	gga	aga	tgc	gat	cgt	gta	aca	cta	ctc	aca	ata	gaa	tct	gtg	288
Cys	Asn	Gly	Arg	Cys	Asp	Arg	Val	Thr	Leu	Leu	Thr	Ile	Glu	Ser	Val	
			85						90					95		
aat	gct	ctc	ccg	gat	att	att	gtc	ttc	tca	aag	gat	cat	ccg	gat	gca	336
Asn	Ala	Leu	Pro	Asp	Ile	Ile	Val	Phe	Ser	Lys	Asp	His	Pro	Asp	Ala	
			100					105					110			
agg	cat	gtg	ttt	ccc	aaa	caa	aat	gtg	gaa	tag						369

Arg His Val Phe Pro Lys Gln Asn Val Glu *
 115 120

<210> 468
 <211> 122
 <212> PRT
 <213> vaccinia virus

<400> 468
 Met Lys Ser Val Leu Tyr Ser Tyr Ile Leu Phe Leu Ser Cys Ile Ile
 1 5 10 15
 Ile Asn Gly Arg Asp Ile Ala Pro His Ala Pro Ser Asp Gly Lys Cys
 20 25 30
 Lys Asp Asn Glu Tyr Lys Arg His Asn Leu Cys Pro Gly Thr Tyr Ala
 35 40 45
 Ser Arg Leu Cys Asp Ser Lys Thr Asn Thr Gln Cys Thr Pro Cys Gly
 50 55 60
 Ser Gly Thr Phe Thr Ser Arg Asn Asn His Leu Pro Ala Cys Leu Ser
 65 70 75 80
 Cys Asn Gly Arg Cys Asp Arg Val Thr Leu Leu Thr Ile Glu Ser Val
 85 90 95
 Asn Ala Leu Pro Asp Ile Ile Val Phe Ser Lys Asp His Pro Asp Ala
 100 105 110
 Arg His Val Phe Pro Lys Gln Asn Val Glu
 115 120

<210> 469
 <211> 441
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(441)

<400> 469
 atg cga tcg tgt aac act act cac aat aga atc tgt gaa tgc tct ccc 48
 Met Arg Ser Cys Asn Thr Thr His Asn Arg Ile Cys Glu Cys Ser Pro
 1 5 10 15
 gga tat tat tgt ctt ctc aaa gga tca tcc gga tgc aag gca tgt gtt 96
 Gly Tyr Tyr Cys Leu Leu Lys Gly Ser Ser Gly Cys Lys Ala Cys Val
 20 25 30
 tcc caa aca aaa tgt gga ata gga tac gga gta tcc gga gac gtc atc 144
 Ser Gln Thr Lys Cys Gly Ile Gly Tyr Gly Val Ser Gly Asp Val Ile
 35 40 45
 tgt tct ccg tgt ggt ctc gga aca tat tct cac acc gtc tct tcc gca 192
 Cys Ser Pro Cys Gly Leu Gly Thr Tyr Ser His Thr Val Ser Ser Ala
 50 55 60
 gat aaa tgc gaa ccc gta ccc aga aat acg ttt aac tat atc gat gtg 240
 Asp Lys Cys Glu Pro Val Pro Arg Asn Thr Phe Asn Tyr Ile Asp Val
 65 70 75 80
 gaa att aac ctg tat cca gtt aac gac aca tcg tgt act cgg acg acc 288

Glu	Ile	Asn	Leu	Tyr	Pro	Val	Asn	Asp	Thr	Ser	Cys	Thr	Arg	Thr	Thr		
				85					90					95			
act	acc	ggg	ctc	agc	gaa	tcc	atc	tca	acg	tcg	gaa	cta	act	att	act	336	
Thr	Thr	Gly	Leu	Ser	Glu	Ser	Ile	Ser	Thr	Ser	Glu	Leu	Thr	Ile	Thr		
			100					105					110				
atg	aat	cat	aaa	gac	tgc	gat	ccc	gtc	ttt	cgt	gat	gga	tac	ttc	tct	384	
Met	Asn	His	Lys	Asp	Cys	Asp	Pro	Val	Phe	Arg	Asp	Gly	Tyr	Phe	Ser		
		115					120					125					
gtc	ctt	aat	aag	gta	gca	act	tca	ggg	ttc	ttt	aca	gga	gaa	agg	tgt	432	
Val	Leu	Asn	Lys	Val	Ala	Thr	Ser	Gly	Phe	Phe	Thr	Gly	Glu	Arg	Cys		
	130					135					140						
gca	ctc	tga														441	
Ala	Leu	*															
145																	

<210> 470
 <211> 146
 <212> PRT
 <213> vaccinia virus

Met	Arg	Ser	Cys	Asn	Thr	Thr	His	Asn	Arg	Ile	Cys	Glu	Cys	Ser	Pro		
1				5				10						15			
Gly	Tyr	Tyr	Cys	Leu	Leu	Lys	Gly	Ser	Ser	Gly	Cys	Lys	Ala	Cys	Val		
			20					25					30				
Ser	Gln	Thr	Lys	Cys	Gly	Ile	Gly	Tyr	Gly	Val	Ser	Gly	Asp	Val	Ile		
		35					40					45					
Cys	Ser	Pro	Cys	Gly	Leu	Gly	Thr	Tyr	Ser	His	Thr	Val	Ser	Ser	Ala		
	50					55					60						
Asp	Lys	Cys	Glu	Pro	Val	Pro	Arg	Asn	Thr	Phe	Asn	Tyr	Ile	Asp	Val		
65					70					75					80		
Glu	Ile	Asn	Leu	Tyr	Pro	Val	Asn	Asp	Thr	Ser	Cys	Thr	Arg	Thr	Thr		
			85						90					95			
Thr	Thr	Gly	Leu	Ser	Glu	Ser	Ile	Ser	Thr	Ser	Glu	Leu	Thr	Ile	Thr		
			100					105					110				
Met	Asn	His	Lys	Asp	Cys	Asp	Pro	Val	Phe	Arg	Asp	Gly	Tyr	Phe	Ser		
		115					120					125					
Val	Leu	Asn	Lys	Val	Ala	Thr	Ser	Gly	Phe	Phe	Thr	Gly	Glu	Arg	Cys		
	130					135					140						
Ala	Leu																
145																	

<210> 471
 <211> 726
 <212> DNA
 <213> vaccinia virus

<220>
 <221> CDS
 <222> (1)...(726)

atg	cat	gtg	cct	gcc	agt	ctt	cag	caa	tcc	tcc	tcc	tcg	tgt	acg	gaa	48	
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Met	His	Val	Pro	Ala	Ser	Leu	Gln	Gln	Ser	Ser	Ser	Ser	Cys	Thr	Glu		
1				5					10					15			
gaa	gaa	aac	aaa	cat	cat	atg	gga	atc	gat	gtt	att	atc	aaa	gtc	aca	96	
Glu	Glu	Asn	Lys	His	His	Met	Gly	Ile	Asp	Val	Ile	Ile	Lys	Val	Thr		
		20						25					30				
aag	caa	gac	caa	aca	ccg	acc	aat	gat	aag	att	tgc	caa	tcc	gta	acg	144	
Lys	Gln	Asp	Gln	Thr	Pro	Thr	Asn	Asp	Lys	Ile	Cys	Gln	Ser	Val	Thr		
		35					40					45					
gaa	att	aca	gag	tcc	gag	tca	gat	cca	gat	ccc	gag	gtg	gaa	tca	gaa	192	
Glu	Ile	Thr	Glu	Ser	Glu	Ser	Asp	Pro	Asp	Pro	Glu	Val	Glu	Ser	Glu		
	50					55					60						
gat	gat	tcc	aca	tca	gtc	gag	gat	gta	gat	cct	cct	acc	act	tat	tac	240	
Asp	Asp	Ser	Thr	Ser	Val	Glu	Asp	Val	Asp	Pro	Pro	Thr	Thr	Tyr	Tyr		
65					70					75					80		
tcc	atc	atc	ggg	gga	ggg	ctg	aga	atg	aac	ttt	gga	ttc	acc	aaa	tgt	288	
Ser	Ile	Ile	Gly	Gly	Gly	Leu	Arg	Met	Asn	Phe	Gly	Phe	Thr	Lys	Cys		
			85						90					95			
cct	cag	att	aaa	tcc	atc	tca	gaa	tcc	gct	gat	gga	aac	aca	gtg	aat	336	
Pro	Gln	Ile	Lys	Ser	Ile	Ser	Glu	Ser	Ala	Asp	Gly	Asn	Thr	Val	Asn		
			100					105					110				
gct	aga	ttg	tcc	agc	gtg	tcc	cca	gga	caa	ggg	aag	gac	tct	ccc	gcg	384	
Ala	Arg	Leu	Ser	Ser	Val	Ser	Pro	Gly	Gln	Gly	Lys	Asp	Ser	Pro	Ala		
		115					120					125					
atc	act	cat	gaa	gaa	gct	ctt	gct	atg	atc	aaa	gac	tgt	gag	gtg	tct	432	
Ile	Thr	His	Glu	Glu	Ala	Leu	Ala	Met	Ile	Lys	Asp	Cys	Glu	Val	Ser		
	130					135					140						
atc	gac	atc	aga	tgt	agc	gaa	gaa	gag	aaa	gac	agc	gac	atc	aag	acc	480	
Ile	Asp	Ile	Arg	Cys	Ser	Glu	Glu	Glu	Lys	Asp	Ser	Asp	Ile	Lys	Thr		
145					150					155					160		
cat	cca	gta	ctc	ggg	tct	aac	atc	tct	cat	aag	aaa	gtg	agt	tac	gaa	528	
His	Pro	Val	Leu	Gly	Ser	Asn	Ile	Ser	His	Lys	Lys	Val	Ser	Tyr	Glu		
				165					170					175			
gat	atc	atc	ggg	tca	acg	atc	gtc	gat	aca	aaa	tgc	gtc	aag	aat	cta	576	
Asp	Ile	Ile	Gly	Ser	Thr	Ile	Val	Asp	Thr	Lys	Cys	Val	Lys	Asn	Leu		
			180					185					190				
gag	ttt	agc	gtt	cgt	atc	gga	gac	atg	tgc	aag	gaa	tca	tct	gaa	ctt	624	
Glu	Phe	Ser	Val	Arg	Ile	Gly	Asp	Met	Cys	Lys	Glu	Ser	Ser	Glu	Leu		
		195					200					205					
gag	gtc	aag	gat	gga	ttc	aag	tat	gtc	gac	gga	tcg	gca	tct	gaa	ggg	672	
Glu	Val	Lys	Asp	Gly	Phe	Lys	Tyr	Val	Asp	Gly	Ser	Ala	Ser	Glu	Gly		
	210					215					220						
gca	acc	gat	gat	act	tca	ctc	atc	gat	tca	aca	aaa	ctc	aaa	gcg	tgt	720	
Ala	Thr	Asp	Asp	Thr	Ser	Leu	Ile	Asp	Ser	Thr	Lys	Leu	Lys	Ala	Cys		
225					230					235					240		

gtc tga
Val *

726

<210> 472
<211> 241
<212> PRT
<213> vaccinia virus

<400> 472
Met His Val Pro Ala Ser Leu Gln Gln Ser Ser Ser Ser Cys Thr Glu
1 5 10 15
Glu Glu Asn Lys His His Met Gly Ile Asp Val Ile Ile Lys Val Thr
20 25 30
Lys Gln Asp Gln Thr Pro Thr Asn Asp Lys Ile Cys Gln Ser Val Thr
35 40 45
Glu Ile Thr Glu Ser Glu Ser Asp Pro Asp Pro Glu Val Glu Ser Glu
50 55 60
Asp Asp Ser Thr Ser Val Glu Asp Val Asp Pro Pro Thr Thr Tyr Tyr
65 70 75 80
Ser Ile Ile Gly Gly Gly Leu Arg Met Asn Phe Gly Phe Thr Lys Cys
85 90 95
Pro Gln Ile Lys Ser Ile Ser Glu Ser Ala Asp Gly Asn Thr Val Asn
100 105 110
Ala Arg Leu Ser Ser Val Ser Pro Gly Gln Gly Lys Asp Ser Pro Ala
115 120 125
Ile Thr His Glu Glu Ala Leu Ala Met Ile Lys Asp Cys Glu Val Ser
130 135 140
Ile Asp Ile Arg Cys Ser Glu Glu Glu Lys Asp Ser Asp Ile Lys Thr
145 150 155 160
His Pro Val Leu Gly Ser Asn Ile Ser His Lys Lys Val Ser Tyr Glu
165 170 175
Asp Ile Ile Gly Ser Thr Ile Val Asp Thr Lys Cys Val Lys Asn Leu
180 185 190
Glu Phe Ser Val Arg Ile Gly Asp Met Cys Lys Glu Ser Ser Glu Leu
195 200 205
Glu Val Lys Asp Gly Phe Lys Tyr Val Asp Gly Ser Ala Ser Glu Gly
210 215 220
Ala Thr Asp Asp Thr Ser Leu Ile Asp Ser Thr Lys Leu Lys Ala Cys
225 230 235 240
Val